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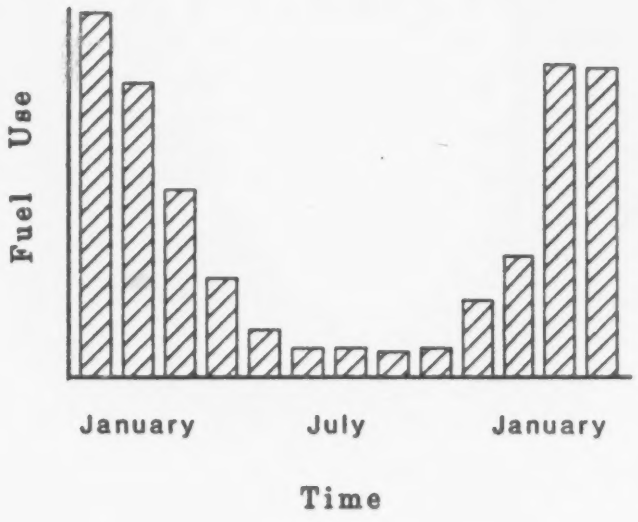
OHIO
SHORT TERM FORECAST
of
Utility Fuels

1987 - 1988



Forecasting and Siting Division
Utilities Department

State of Ohio
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Public Utilities Commission
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Ohio Short Term Energy Forecast of Utility Fuels 1987 - 1988

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EXECUTIVE SUMMARY

Based on one year forecasts submitted by each of the major electric and natural gas utility companies serving Ohio, and based on independent projections of the Division of Forecasting and Siting of the Public Utilities Commission of Ohio, the supplies of fuels for generating electricity and supplies of natural gas for heating and manufacturing are forecasted to be adequate through October 1988. The forecast takes into account the possibility of a 10 percent colder than normal winter.

Supplies of coal, used to generate more than 97 percent of the electricity in Ohio, are not expected to fall below a safe margin for any generating utility company through October 1988.

Supplies of the eight major natural gas distribution companies serving the state are expected to be adequate through October 1988.

As in past years, roughly 50 percent of the coal supplied to Ohio electric utilities is from out of state sources. Approximately 89 percent of Ohio's natural gas supply will continue to come from out of state sources.

OHIO SHORT TERM FORECAST OF UTILITY FUELS 1987 - 1988

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1 INTRODUCTION

Ohio Short Term Forecast of Utility Fuels 1987-1988 is a summary, analysis and assessment of the patterns and trends in the monthly demands for the supplies of natural gas and electricity in Ohio for the twelve month period beginning November 1, 1987. The utilities' forecasts and historical data are the primary input for this report. Several other sources of information have also been used, including historical energy data and the independent forecasting capabilities developed by the Division of Forecasting and Siting, federal energy reports and publications from the American Gas Association and the Electric Power Research Institute. A comprehensive data base has been developed to support the Division of Forecasting and Siting's ability to provide timely analyses and forecasts. This report is the technical and forecast summary from these sources.

1.1 Objectives

The major objectives guiding the preparation of this report are:

1. To provide historical data on energy usage, projections of energy availability and projections of consumption for the coming year.
2. To provide an analysis and an interpretation of short-term changes in energy supply and demand.
3. To provide an assessment of the adequacy of natural gas and electric energy supply for the upcoming twelve months.
4. To provide a strategy to prevent or mitigate any interruption or curtailment of service, if a potential deficiency is identified.

1.2 Requirements and Scope of This Report

Ohio Revised Code, section 4905.14(B), requires the natural gas and electric utilities in Ohio to file short-term forecast reports with the Public Utilities Commission of Ohio on the first day of November of each year. These reports include the following information:

1. The total demand, stated in terms of kilowatt hours or cubic feet, that the company projects will be expected of the company for the following twelve months.
2. With respect to electric light companies, the supply of fuel for the generation of electricity that they will possess as of the first day of November.
3. With respect to natural gas companies, the pertinent details of supply contracts with pipeline companies and producers for the following twelve months that they have executed and the quantity of the gas that they will possess in storage and will be available for delivery as of the first day of November.
4. Where it appears from a comparison of the information reported that the total demand projected by the company for the twelve months following the date of the report will exceed the ability of the company to furnish it, the means which the company intends to employ in order to prevent any interruption or curtailment of service.

The Division of Forecasting and Siting prepares a summary, analysis and assessment of this information as an extention of its public information function.

The municipal utilities, industrial facilities and the rural electric cooperatives are not required to file this semi-annual report. Accordingly, this report incorporates data from the major electric and gas utilities serving the State. The Division of Forecasting and Siting estimates that in 1987 the major utilities included in this report provided approximately 96 percent of the electricity consumed in the State and 98 percent of the natural gas, excluding self-help gas.

1.3 Division of Forecasting and Siting Forecasts

As part of its analysis, the Division of Forecasting and Siting makes its own independent forecasts to serve as validation checks. The Division has the capability to forecast monthly demand by utility and for the State as a whole within a reasonable level of error (less than five percent in most cases). Such forecasts are based on an analysis of historical month-by-month actual consumption for both electricity and

natural gas and other appropriate variables such as population, income, the business cycle, and temperature data. However, as in any short-term forecast, certain important socioeconomic conditions are assumed in the independent forecasts. These assumptions are:

1. Energy consumption generally follows a seasonal and historical pattern.
2. Long-term socioeconomic changes have a minimal effect on short-term energy consumption.

1.4 Overview of This Report

The report is divided into two parts: electric energy and natural gas. Materials presented in these two parts are, for the most part, parallel in arrangement. They contain:

(a) a profile of reporting utilities;
(b) historical sources of supplies and suppliers;
(c) consumption history by sector, utility and the State;
(d) the utilities' forecasts and independent forecasts by the Division of Forecasting and Siting.

1.5 Energy Consumption and Temperature

Changes in the observed annual energy requirements of the three major consuming sectors (residential, commercial and industrial) may be explained by a variety of factors. Temperature is a variable which explains much of the observed variation. It is particularly significant in the residential and commercial sectors, during summer and winter periods, when electricity and natural gas are used to maintain comfortable room temperatures.

The two indicators most widely used to measure temperature-sensitive energy requirements are heating degree days and cooling degree days. Degree days are calculated as follows: The daily mean temperature is obtained by adding together the maximum and minimum temperatures reported for the day and dividing the total by two. When the daily mean temperature is 65 degrees Fahrenheit, the degree day total

two. When the daily mean temperature is 65 degrees Fahrenheit, the degree day total is zero. Each degree of mean temperature below 65 degrees Fahrenheit is counted as one heating degree day. For example, if the maximum temperature was 60 degrees Fahrenheit and the minimum temperature was 50 degrees Fahrenheit for a particular day, then the daily mean temperature would be 55 degrees Fahrenheit {(60+50)/2}. The number of cooling degree days would be 10 {65-55}. This is a convenient indicator because the amount of heat required to maintain a certain temperature level is proportional to heating degree days in winter.

The cooling degree days are defined similarly; Each degree of mean temperature above 65 degree Fahrenheit is counted as one cooling degree day. If the daily mean temperature is 65 degree Fahrenheit or lower, the cooling degree day total is zero. For example, if the maximum temperature was 80 degrees Fahrenheit and the minimum temperature was 70 degrees Fahrenheit for a particular day, then the daily mean temperature would be 75 degrees Fahrenheit {(80+70)/2}. The number of cooling degree days would be 10 {75-65}. This is another convenient forecasting indicator because the amount of energy required to maintain a certain temperature level is proportional to cooling degree days in summer.

Since most homes and commercial buildings in Ohio are heated by natural gas, the reporting gas utilities are required to submit supply and demand forecasts under a normal winter scenario and a 10 percent colder than normal winter scenario. In addition, the relationship between natural gas consumption and heating degree days is closely monitored during the winter heating season (from November through March).

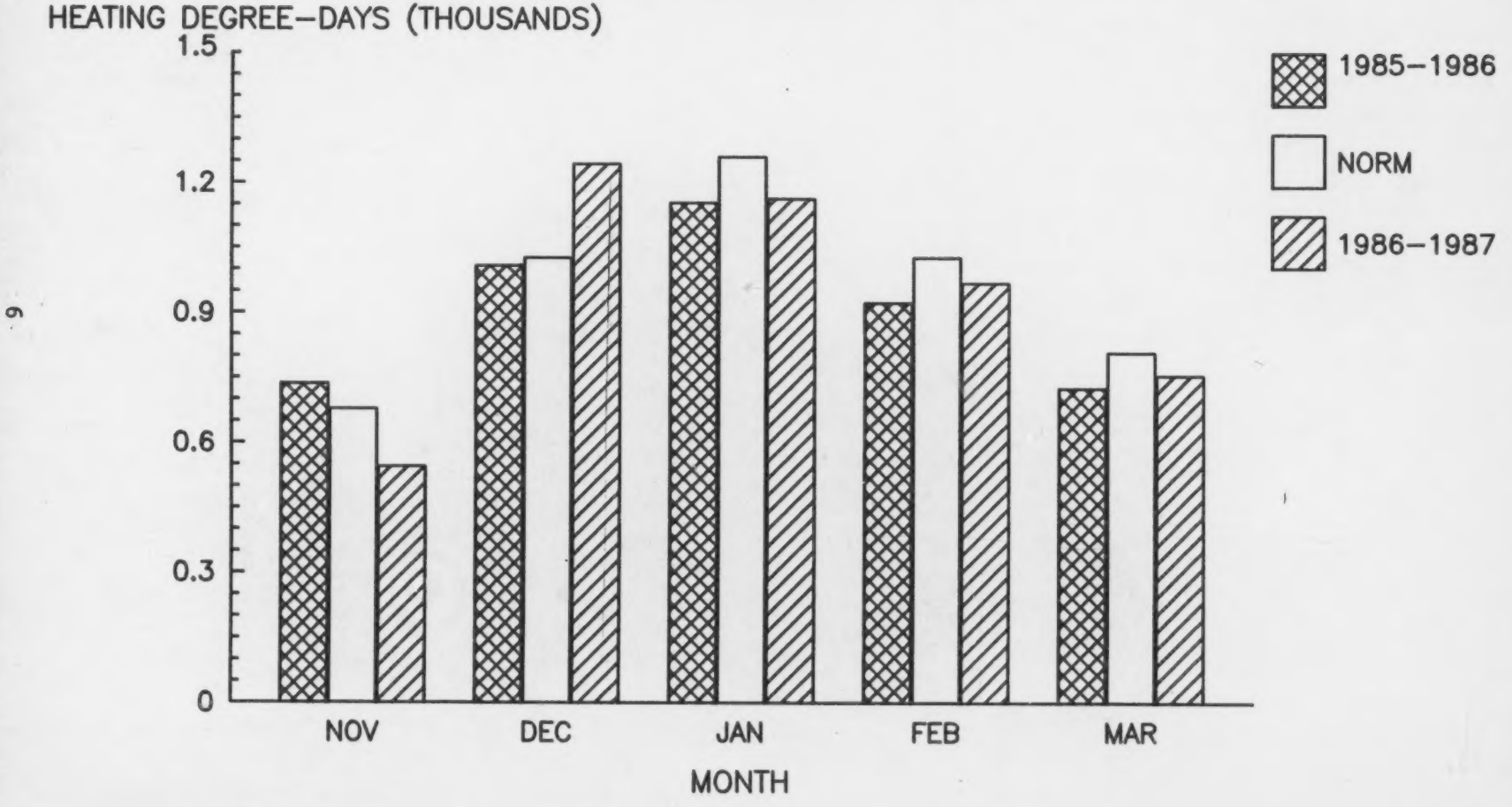
Table 1 and Figure 1 present monthly comparisons of population-weighted state heating degree days for the past two heating seasons. A "normal" heating degree day series, defined as the 17 year average of the years 1970 to 1986 is also included in the comparisons.

TABLE 1. POPULATION-WEIGHTED
HEATING DEGREE-DAY SUMMARY FOR OHIO
NOVEMBER 1985 to MARCH 1987

MONTH	1986-1987	NORM	1985-1986
NOVEMBER	737	679	546
DEVIATION FROM NORM	8.5%		-19.6%
DEVIATION FROM PREVIOUS YEAR	35.0%		-14.4%
DECEMBER	1009	1027	1244
DEVIATION FROM NORM	-1.8%		21.1%
DEVIATION FROM PREVIOUS YEAR	-18.9%		-2.2%
JANUARY	1154	1260	1163
DEVIATION FROM NORM	-8.4%		-7.7%
DEVIATION FROM PREVIOUS YEAR	-0.8%		-13.3%
FEBRUARY	923	1027	968
DEVIATION FROM NORM	-10.1%		-5.7%
DEVIATION FROM PREVIOUS YEAR	-4.6%		19.7%
MARCH	726	808	755
DEVIATION FROM NORM	-10.1%		-6.6%
DEVIATION FROM PREVIOUS YEAR	-3.8%		-28.9%

SOURCE: National Oceanic and Atmospheric Administration, Historical Climatology Series 5-1 and the Division of Forecasting and Siting.

FIG. 1. POPULATION–WEIGHTED DEGREE DAYS FOR OHIO WINTER HEATING SEASONS (1986 & 1987)



SOURCE: NATIONAL OCEANIC & ATMOSPHERIC ADMINISTRATION.

2 ELECTRICITY

This section is based on the November forecasts filed by nine major Ohio electric utilities. Two of these, Columbus and Southern Power Company and Ohio Power Company, are subsidiaries of the American Electric Power Company. Because the centrally dispatched American Electric Power operates as a integrated distribution system, the report reviews forecasts of demand and fuel adequacy for the entire American Electric Power Company. The Allegheny Power System is also a centralized power generation and distribution system and is reviewed in the same manner. One subsidiary Monongahela Power, is a Pennsylvania utility whose service area includes a part of southeast Ohio. The forecasts of eight utilities serving Ohio are presented as follows:

1. Allegheny Power System (APS) Monongahela Power Company
   Other out-of-state subsidiaries not subject to reporting
2. American Electric Power Company (AEP)
   Columbus & Southern Power Company (C&SP)
   Ohio Power Company (OP)
   Other out-of-state subsidiaries not subject to reporting
3. Cincinnati Gas and Electric Company (CG&E)
4. Cleveland Electric Illuminating Company (CEI)
5. Dayton Power and Light Company (DP&L)
6. Ohio Edison Company (and its subsidiary Pennsylvania Power Company, which is not subject to reporting) (OE)
7. Ohio Valley Electric Corporation (OVEC)
8. Toledo Edison Company (TE)

With the exception of OVEC, each of these is an investor-owned utility supplying electricity to residential, commercial and industrial customers in its service area. The Ohio Valley Electric Corporation is a single-customer utility supplying power for the uranium enrichment plant at Piketon, Ohio. It also sells surplus generation to other electric utilities.

2.1 Supply and Generation

2.1.1 Source/Supplier of Fuel for Electric Generation

Fuels used in Ohio for electric generation include coal, oil, natural gas and nuclear fuel. Nuclear fuel sources are not monitored by the Division. All other fuels are monitored through the utilities' monthly reports. Tables 2 and 3 list coal and oil deliveries to power plants located in Ohio. The main sources of supply and/or suppliers of these fuels remain the same as in the last reporting period.

Coal deliveries to Ohio electric plants during the twelve months ending July 1987 decreased by 820,500 short tons or 1.76 percent from the previous twelve month period (see Table 2 and Figure 2). Deliveries of oil to Ohio power plants decreased by 8,300 barrels or 2.04 percent during the twelve months ending July 1987 from the previous twelve month period (see Table 3 and Figure 3).

2.1.2 Electric Generation by Type of Fuel

Coal remains the main source of fuel for electric generation in Ohio, a condition which is not expected to change in the future. In the twelve month period ending July 1987, 97.36 percent of the total electricity generated in Ohio was from coal, 0.08 percent from gas and oil and 2.56 percent from nuclear generation.

The amount of electricity generated by nuclear power continues to grow. From January 1987 to July 1987, Davis-Besse and Perry, the two nuclear generation facilities in Ohio, generated over 3 million megawatt-hours which is 50 percent more than has been generated in the last two years. Barring any major shutdowns, next year, 4 to 5 percent of the electricity generated in Ohio should be from nuclear power.

Table 4 and Figure 4 show the combined monthly totals of the reporting utilities' net generation from Ohio plants. Historical power plant fuel consumption and fuel stocks are presented in Table 5.

2.2 Historical Behavior of Sectoral Requirements

Electricity consumption by the residential and commercial sectors exhibits regular seasonal patterns while the industrial sector fluctuates widely with general economic conditions (see Appendix A).

Residential sectoral consumption posted a 4.0 percent gain for the twelve month period ending in August 1987 compared to a 5.1 percent increase last year (see Table 6 and Figure 5-A). The increase in the 1986-1987 period was mainly due to the warmer than normal summer months of June, July and August which resulted in a 13.3 percent increase in sales for those three months.

Commercial sectoral consumption posted a 4.9 percent gain for the year ending in August 1987 (see Table 6 and Figure 5-B). Historically, July and August represent the two months in which commercial sales are usually at their highest for the year. The warmer than normal summer months were a major factor in the rise of sales in the commercial sector. There was a 8.9 percent increase in consumption in 1987 versus 1986 for the three summer months of June, July and August.

Industrial sectoral consumption posted a 2.0 percent gain for the twelve month period ending in August 1987 in contrast to a 1.9 percent decrease in August 1986 (see Table 6 and Figure 5-C). With the leveling off of the current recovery phase in 1987, industrial sales have fluctuated throughout the year. Industrial sales were down 3.4 percent for the first five months versus the previous year and up 3.2 percent for the next five months. With a large surge of industrial sales in July and August (12 percent increase for the same two months of the previous year), the industrial sector was able to post a modest increase for the 1986-1987 year.

Total electricity consumption in the State for between September 1986 and August 1987 was 3.3 percent higher than the preceding twelve months (see Table 6 and Figures 5-D & 5-E). Total sales from September 1986 to March 1987 were essentially the same as the previous year. Consumption increased at a moderate pace for the next couple of months, but from June to August, total consumption posted a large increase of 10.7 percent over the previous year. This increase was mainly due to the much warmer than normal temperatures experienced in the summer of 1987.

2.3 Twelve Month Electricity Demand Forecasts

Each electric utility is required by the Ohio Revised Code, section 4905.14(B), to submit forecasts at the beginning of July and November to the Public Utilities Commission of Ohio, Division of Forecasting and Siting. The forecasts are required to project the total demand of each company's service area for the following twelve months. These forecasts are displayed in Appendix A, Tables A-1 through A-8, along with independent forecasts prepared by the Division of Forecasting and Siting. The Division also prepares independent twelve month forecasts of electricity demand for the State of Ohio, by sector. These forecasts are displayed in Appendix A, Tables A-9 through A-12.

2.4 Assessment of Utility Fuel Adequacy

Tables 7-A and 7-B present the utilities' projections of deliveries, consumption, and end-of-month stocks of coal and oil for the generation of electricity. Table 7-C presents the Division's independent assessment of the adequacy of supply of generating fuels. The Division's projections and assessments are presented for the CAPCO Group of utilities, which include Cleveland Electric Illuminating Company, Ohio Edison Company, and Toledo Edison Company; for the American Electric Power and Allegheny Power Systems, and for Buckeye Power Inc., Dayton Power and Light Company, Cincinnati Gas and Electric Company, and the Ohio Valley Electric Corporation.

2.4.1 Coal

In January 31, 1988, the United Mine Workers of America labor contract will expire. In preparation of a possible strike, the utility companies have begun to increase their stockpiles of coal. The average projected coal supply for January 1988 is estimated to meet generation requirements for 79 days which is an increase of 25 percent from the previous year.

The Division's projections, as well as those of the electric utilities, indicate an

adequate supply of coal throughout the forecast period for each utility serving the State. The American Electric Power Company possessed the highest average monthly inventory of coal with a little over 3 months of supplies while Dayton Power and Light Company retained the lowest average monthly inventory with about 2 months of coal supplies in stock. The average monthly inventory for the eight companies under consideration was 70 days.

2.4.2 Oil

Each electric utility forecasts an adequate supply of oil for the generation of electricity throughout the forecast period. Net generation from oil is currently less than 0.1 percent of total net generation. Oil is being used as a start-up fuel and in peaking units. Due to the current high reserve margins for all utilities, the Division does not anticipate that the utilities will generate much electricity from peaking units and consequently our projections indicate that there will be an adequate supply of oil, under normal generating conditions.

TABLE 2. SOURCE OF COAL SUPPLY TO ELECTRIC UTILITIES
OHIO PORTION
1000 Short Tons

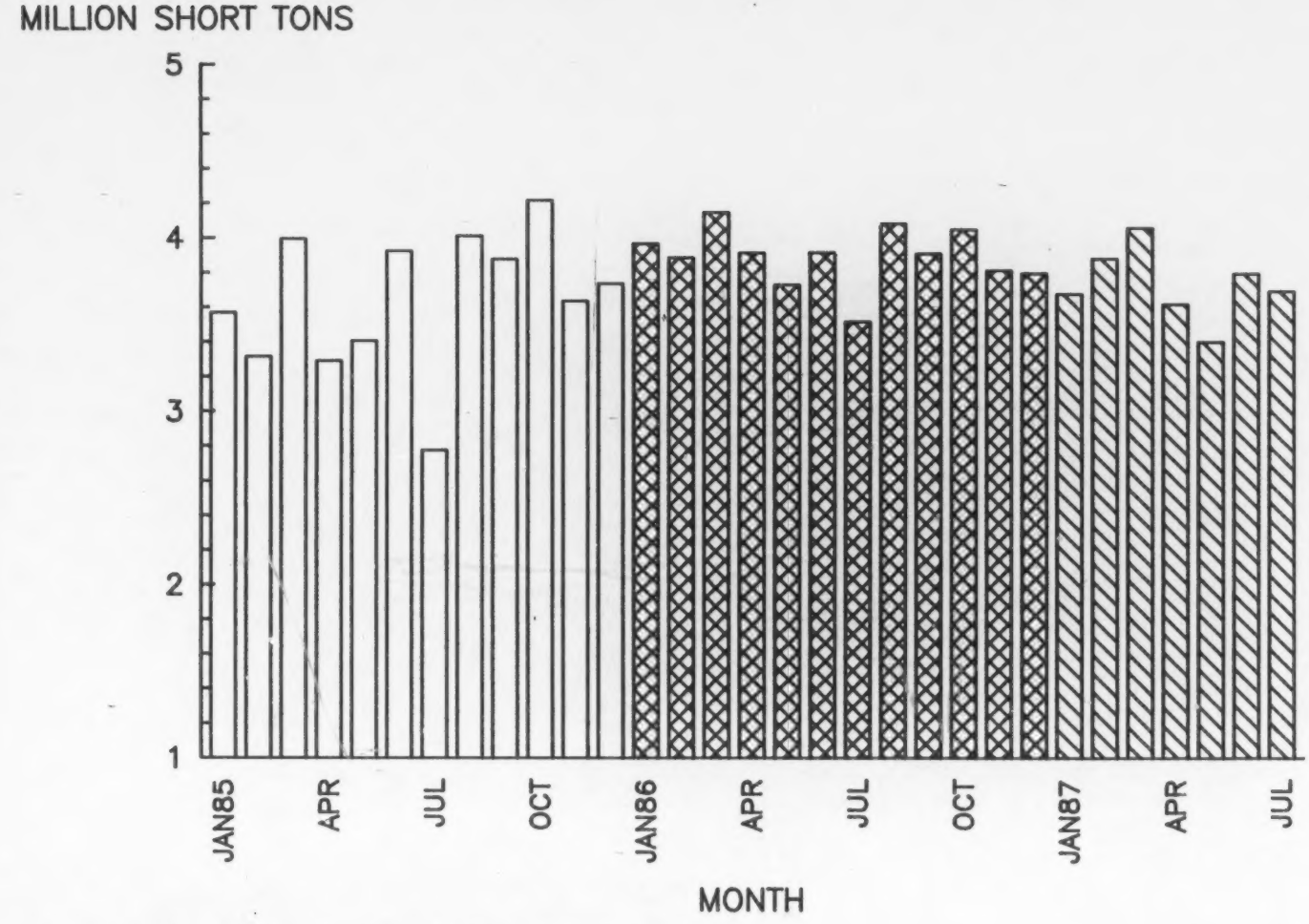
Month	DISTRICT NO. 1	2	3	4	6	7&8	9	Other	Total
1985									
January	0.0	166.8	29.1	1,962.9	363.6	1,027.5	24.5	0.0	3,574.4
February	0.0	215.3	53.4	1,756.1	467.0	807.4	20.8	0.0	3,320.0
March	0.0	199.4	51.2	1,921.9	492.7	1,301.9	32.8	0.0	3,999.9
April	0.0	180.5	51.2	1,631.7	426.7	973.0	31.9	0.0	3,295.0
May	0.0	196.8	49.3	1,790.2	305.0	1,051.8	17.4	0.0	3,410.5
June	0.0	250.3	31.4	2,196.9	269.7	1,181.0	0.0	0.0	3,929.3
July	0.0	201.2	65.6	1,529.7	97.3	857.0	28.8	0.0	2,779.6
August	0.0	258.5	78.9	2,175.7	354.6	1,148.3	0.0	0.0	4,016.0
September	0.0	242.4	42.9	2,087.6	331.3	1,161.1	16.6	0.0	3,881.9
October	0.0	306.5	45.5	2,254.4	353.2	1,219.8	40.2	0.0	4,219.6
November	0.0	177.6	38.3	1,933.3	342.3	1,148.1	0.0	0.0	3,639.6
December	0.0	160.8	25.2	2,098.8	316.7	1,113.0	25.5	0.0	3,740.0
Total	0.0	2,556.1	562.0	23,339.2	4,120.1	12,989.9	238.5	0.0	43,805.8
% of Total	0.0	5.8	1.3	53.3	9.4	29.7	0.5	0.0	100.0
1986									
January	0.0	139.0	23.2	2,355.5	306.6	1,110.7	34.1	0.0	3,969.1
February	0.0	260.1	32.5	2,025.3	325.9	1,194.3	51.3	0.0	3,889.4
March	0.0	273.6	30.6	2,076.8	327.9	1,411.8	28.0	0.0	4,148.7
April	0.0	304.0	44.6	2,088.6	169.0	1,246.9	63.4	0.0	3,916.5
May	0.0	229.8	31.3	2,019.8	304.3	1,117.2	28.6	0.0	3,731.0
June	0.0	211.4	26.3	2,067.0	106.5	1,457.7	47.4	0.0	3,916.3
July	0.0	275.3	51.8	1,726.7	206.9	1,200.1	57.8	0.0	3,518.6
August	0.0	312.7	6.0	2,085.4	258.9	1,410.6	8.9	0.0	4,082.5
September	0.0	196.7	14.0	2,005.2	295.3	1,395.5	1.4	3.2	3,911.3
October	0.0	285.2	22.1	2,137.1	441.3	1,139.0	23.9	0.0	4,048.6
November	0.0	266.6	19.0	1,861.7	296.5	1,312.4	56.8	0.0	3,813.0
December	0.0	307.9	13.0	1,895.4	284.5	1,278.0	16.9	0.0	3,795.7
Total	0.0	3,062.3	314.4	24,344.5	3,323.6	15,274.2	418.5	3.2	46,740.7
% of Total	0.0	6.6	0.7	52.1	7.1	32.7	0.9	0.0	100.0
1987									
January	0.0	252.1	18.0	2,021.0	316.0	1,031.6	37.5	0.0	3,676.2
February	0.0	256.3	23.1	2,053.9	276.7	1,248.5	21.2	0.0	3,879.7
March	0.0	277.4	12.2	2,202.9	342.9	1,167.2	54.4	0.0	4,057.0
April	0.0	227.8	29.0	1,893.8	287.9	1,159.1	18.0	1.5	3,617.1
May	0.0	192.8	41.0	1,751.1	304.5	1,093.2	4.6	12.7	3,399.9
June	0.0	346.9	0.0	1,765.0	277.8	1,382.4	3.1	18.2	3,793.4
July	10.0	305.4	21.0	1,937.9	183.8	1,218.9	12.3	12.5	3,691.8

District
1. Eastern Pennsylvania
2. Western Pennsylvania
3. Northern West Virginia
4. Ohio
6. Pandhandle (in West Virginia)
7. Southern No. 1 (in West Virginia and Virginia)
8. Southern No. 2 (in West Virginia and Virginia)
9. Western Kentucky

Other- Primarily from Wyoming and Utah

Source: Form FPC 423

FIG. 2. MONTHLY COAL DELIVERIES TO POWER PLANTS IN OHIO (JANUARY 1985 – JULY 1987)



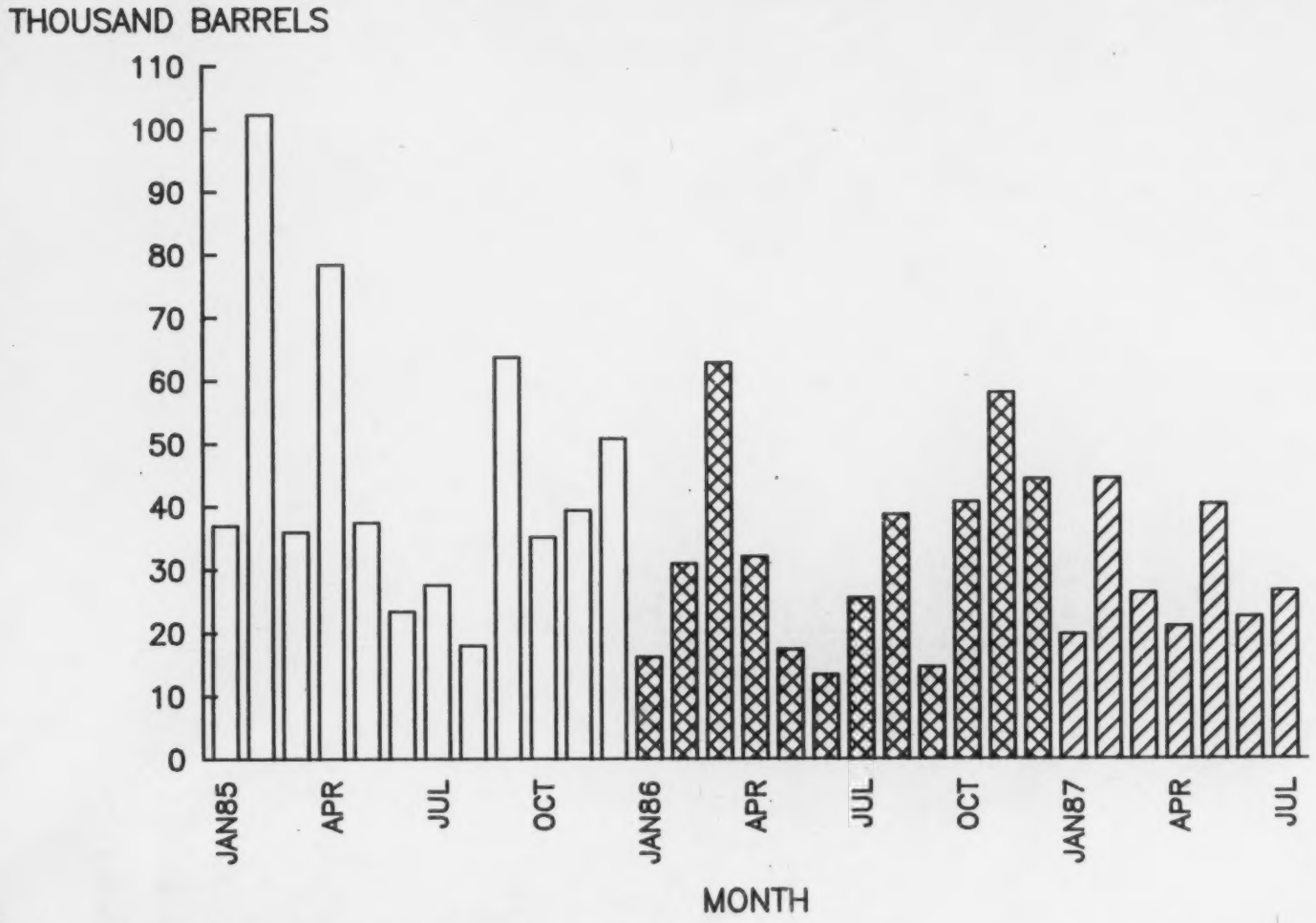
SOURCE: THE DIVISION OF FORECASTING & SITING.

Table 3. Major Oil Suppliers to Electric Utilities
Ohio Portion
(Thousand Barrels)

1985	Allied	Marathon	Standard	Union	Other	Total
January	15.2	0.0	5.1	0.0	16.8	37.1
February	96.2	0.2	6.0	0.0	0.0	102.4
March	20.1	0.2	5.4	0.0	10.4	36.1
April	65.3	0.0	13.2	0.0	0.0	78.5
May	36.9	0.2	0.5	0.0	0.0	37.6
June	18.0	0.4	5.1	0.0	0.0	23.5
July	9.9	0.4	17.4	0.0	0.0	27.7
August	14.7	0.0	3.4	0.0	0.0	18.1
September	45.1	0.2	16.4	0.0	2.1	63.8
October	31.7	0.0	2.4	0.0	1.2	35.3
November	37.1	0.0	2.4	0.0	0.0	39.5
December	39.0	0.0	7.9	0.0	4.0	50.9
Total	508.6	1.6	85.2	0.0	34.5	629.9
% of Total	80.7	0.3	13.5	0.0	5.5	100.0
1986						
January	8.1	0.2	4.4	0.0	3.6	16.3
February	19.1	0.0	3.1	0.0	8.9	31.1
March	39.6	0.0	16.8	0.0	6.5	62.9
April	24.3	0.0	0.0	0.0	7.9	32.2
May	10.8	0.0	3.1	0.0	3.6	17.5
June	7.2	0.0	3.8	0.0	2.5	13.5
July	18.0	0.0	3.2	0.0	4.4	25.6
August	37.6	0.0	0.4	0.0	0.8	38.8
September	9.4	0.0	4.5	0.0	0.8	14.7
October	10.6	0.0	4.6	0.0	25.6	40.8
November	41.4	0.0	3.8	0.0	12.9	58.1
December	13.1	0.0	0.0	0.0	31.3	44.4
Total	239.2	0.2	47.7	0.0	108.8	395.9
% of Total	60.4	0.1	12.0	0.0	27.5	100.0
1987						
January	13.9	0.0	0.0	0.0	6.0	19.9
February	10.2	0.0	0.5	0.0	33.8	44.5
March	10.1	0.4	0.2	0.0	15.7	26.4
April	12.8	0.0	0.5	0.0	7.8	21.1
May	31.2	0.0	0.5	0.0	8.7	40.4
June	14.6	0.0	0.0	0.0	8.0	22.6
July	21.4	0.0	0.2	0.0	5.1	26.7

Source: Form FPC 423 and PUCO. Division of Forecasting and Siting.

FIG. 3. MONTHLY OIL DELIVERIES TO POWER PLANTS IN OHIO (JANUARY 1985 – JULY 1987)



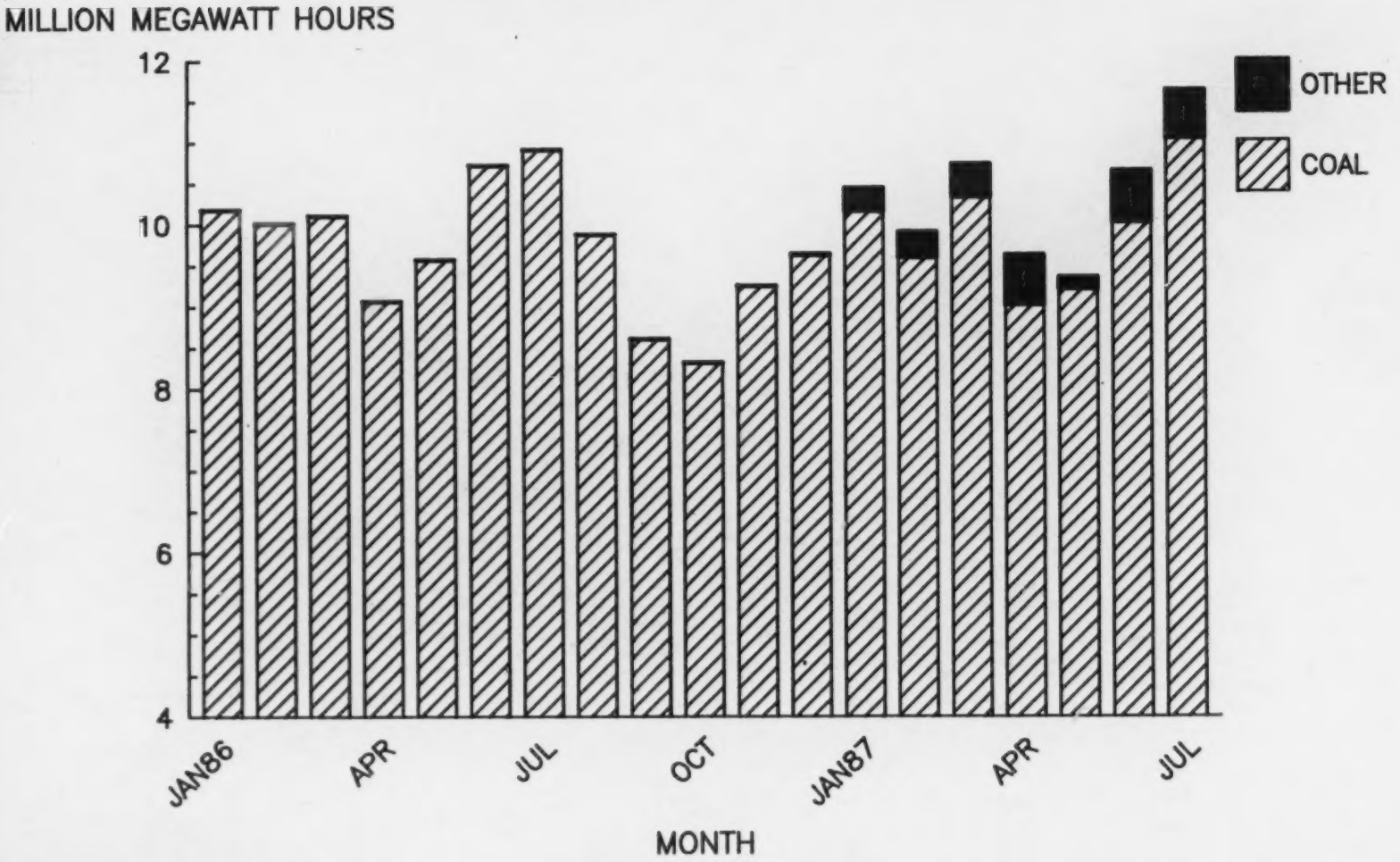
SOURCE: THE DIVISION OF FORECASTING & SITING.

Table 4. Major Ohio Utilities - Net Generation
by Types of Fuel (Ohio Portion)
(Thousand MWH)

1985	Coal	Oil	Gas	Nuclear	Total
January	10407	25	1	129	10562
February	8856	20	0	543	9419
March	8472	6	1	358	8837
April	8717	4	1	254	8976
May	9010	7	2	577	9596
June	9226	4	1	81	9312
July	9847	6	1	0	9854
August	10019	8	2	0	10029
September	9458	11	1	0	9470
October	9169	2	0	0	9171
November	8844	4	1	0	8849
December	10346	8	1	0	10355
Total	112371	105	12	1942	114430
% of Total	98.20	0.09	0.01	1.70	100.00
1986					
January	10183	6	1	0	10190
February	10015	6	0	0	10021
March	10108	3	0	0	10111
April	9063	3	0	0	9066
May	9569	6	0	0	9575
June	10716	6	0	0	10722
July	10905	11	2	0	10918
August	9875	3	0	0	9878
September	8599	14	0	0	8613
October	8312	9	0	0	8321
November	9243	4	0	0	9247
December	9615	5	0	24	9644
Total	116203	76	3	24	116306
% of Total	99.91	0.07	0.00	0.02	100.00
1987					
January	10152	6	0	289	10447
February	9583	5	0	323	9911
March	10318	4	0	415	10737
April	9008	5	0	615	9628
May	9197	9	0	149	9355
June	10010	7	0	635	10652
July	11033	23	0	576	11632

Source: Form FPC 423 and PUCO, Division of Forecasting and Siting.

FIG. 4. NET GENERATION BY TYPE OF FUEL MAJOR OHIO ELECTRIC UTILITIES (OHIO PORTION) (JANUARY 1986 – JULY 1987)



SOURCE: FORM FPC 423

Table 5. Major Ohio Utilities
Fuel Consumption and Stocks
(Ohio Portion)

	Coal (Thousand Tons)		Oil (Thousand 42-Gal. Bbls.)		Gas (MMCF)
1985	Burned	In Stock	Burned	In Stock	Burned
January	4,477.9	11,664.1	128.3	384.2	47.0
February	3,842.9	11,465.0	87.5	378.5	23.9
March	3,687.3	12,135.7	63.2	385.0	29.7
April	3,846.4	12,140.9	36.1	424.1	34.9
May	3,921.8	11,986.6	45.0	417.6	55.5
June	4,093.2	12,321.5	33.5	418.0	28.0
July	4,321.7	11,159.2	53.3	393.9	28.7
August	4,461.3	10,881.9	46.2	375.5	48.1
September	4,170.3	10,734.0	62.7	390.1	42.3
October	4,043.4	11,088.1	37.2	416.0	11.4
November	3,941.5	11,161.3	54.2	403.4	32.3
December	4,550.1	10,498.8	61.8	410.6	47.8
Total	49,357.8	137,237.1	709.0	4,796.8	429.6
Avg/Month	4,113.2	11,436.4	59.1	399.7	35.8
1986					
January	4,461.2	10,075.2	56.9	400.1	26.5
February	4,419.4	9,667.1	46.9	390.6	24.1
March	4,432.8	9,329.7	42.3	409.9	46.7
April	4,052.1	9,863.2	36.9	414.7	4.8
May	4,202.4	9,729.0	49.2	407.0	29.1
June	4,718.1	9,315.8	44.2	388.1	36.9
July	4,910.3	8,234.0	62.0	376.1	59.7
August	4,370.7	8,339.5	48.0	419.2	29.2
September	3,774.3	8,996.7	59.5	406.1	29.5
October	3,654.7	9,846.4	64.4	413.5	17.5
November	4,007.6	10,134.1	57.1	434.1	19.7
December	4,106.1	10,260.1	47.3	428.8	23.7
Total	51,109.7	113,790.8	614.7	4,888.3	347.4
Avg/Month	4,259.1	9,482.6	51.2	407.4	29.0
1987					
January	4,367.7	10,045.9	40.1	318.0	20.2
February	4,108.8	10,202.2	37.0	411.4	13.6
March	4,460.5	10,314.8	45.9	424.4	22.4
April	3,947.0	10,426.0	49.0	407.4	40.1
May	4,123.6	10,150.8	55.9	406.9	44.9
June	4,335.6	10,110.4	58.7	395.4	31.8
July	4,832.1	9,277.0	96.6	355.9	59.5

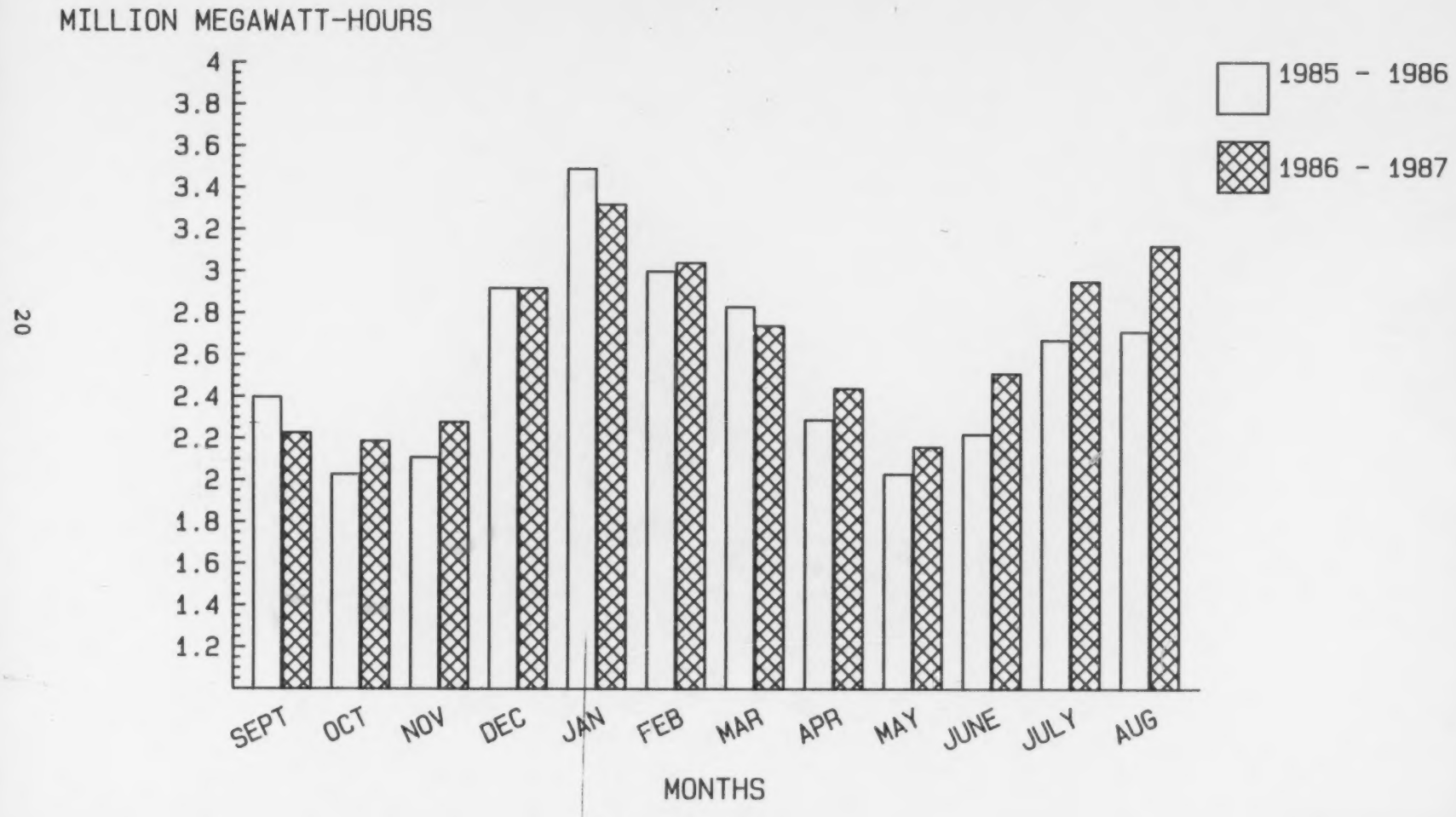
Source: Form FPC 423 and PUCO, Division of Forecasting and Siting

Table 6. Ohio Electricity Consumption
September 1985 - August 1987
(Thousand MWH)

	September	October	November	December	January	February	March	April	May	June	July	August	Total
Residential													
1986-87	2229	2189	2283	2923	3323	3036	2743	2444	2158	2514	2946	3117	31905
1985-86	2397	2026	2111	2916	3485	2999	2825	2288	2032	2220	2670	2707	30676
% Change	-7	8	8	0	-5	1	-3	7	6	13	10	15	4
Commercial													
1986-87	2161	2035	1884	2066	2119	2082	2004	1934	2014	2318	2490	2457	25564
1985-86	2128	1849	1798	2014	2140	2025	2003	1840	1902	2107	2261	2306	24373
% Change	2	10	5	3	-1	3	0	5	6	10	10	7	5
Industrial													
1986-87	3633	3630	3569	3600	3673	3864	3984	3930	3945	4044	3956	4055	45883
1985-86	3775	3767	3707	3682	3770	3824	3901	3828	3800	3808	3530	3611	45003
% Change	-4	-4	-4	-2	-3	1	2	3	4	6	12	12	2
Other													
1986-87	421	424	421	443	454	458	449	430	429	477	510	487	5413
1985-86	436	416	426	479	474	459	436	422	398	423	456	433	5258
% Change	-3	2	-1	-8	-4	-0	3	2	10	13	12	12	3
Total													
1986-87	8444	8278	8157	9032	9569	9440	9180	8738	8556	9353	9902	10116	108765
1985-86	8736	8058	8042	9091	9869	9307	9165	8378	8132	8558	8917	9057	103310
% Change	-3	3	1	-1	-3	1	0	4	5	9	11	12	3

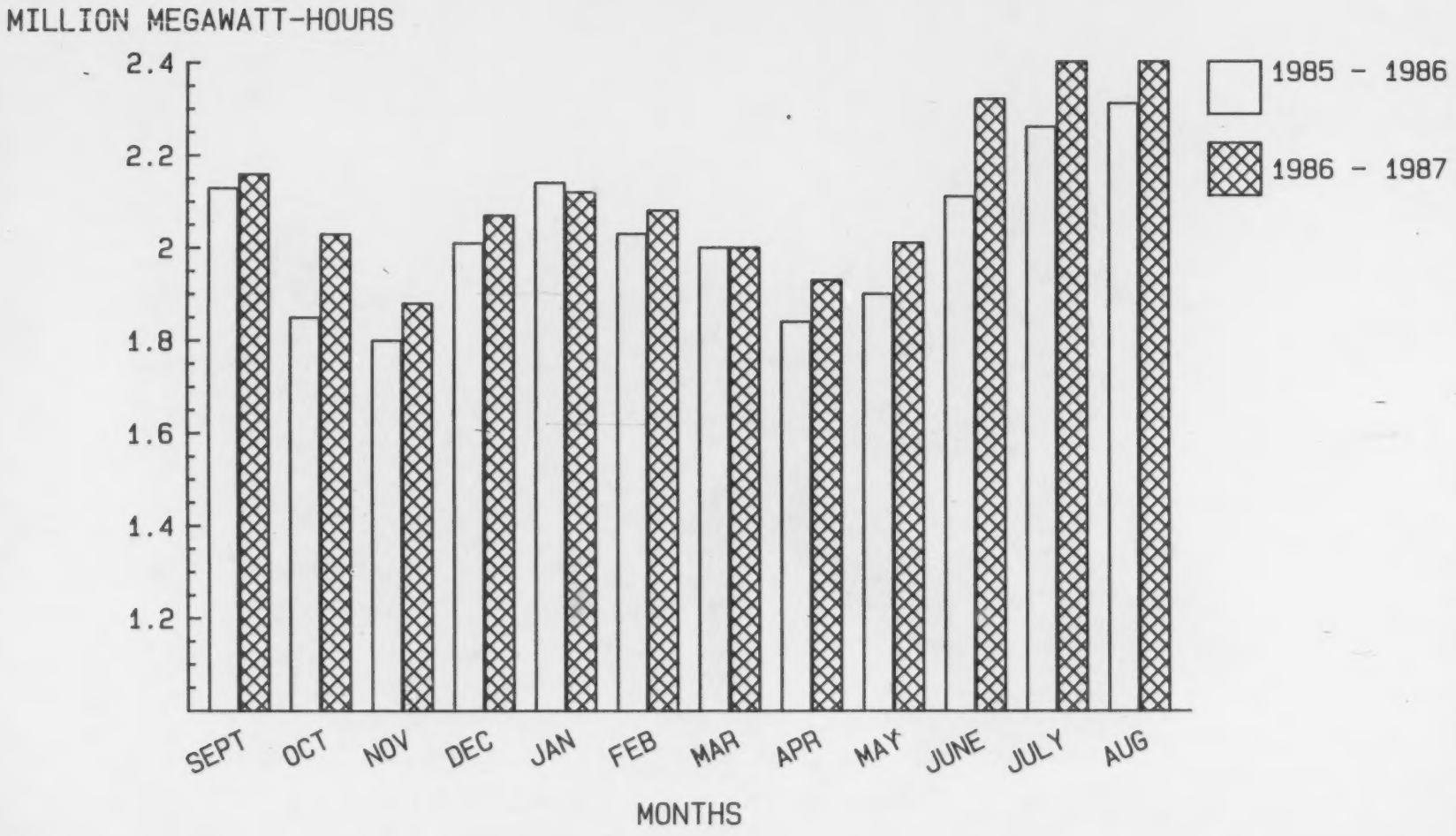
Source: The Ohio Electric Utility Institute: Monthly Summaries.

FIG. 5-A. OHIO RESIDENTIAL ELECTRIC CONSUMPTION 1985 - 1986 VS. 1986 - 1987



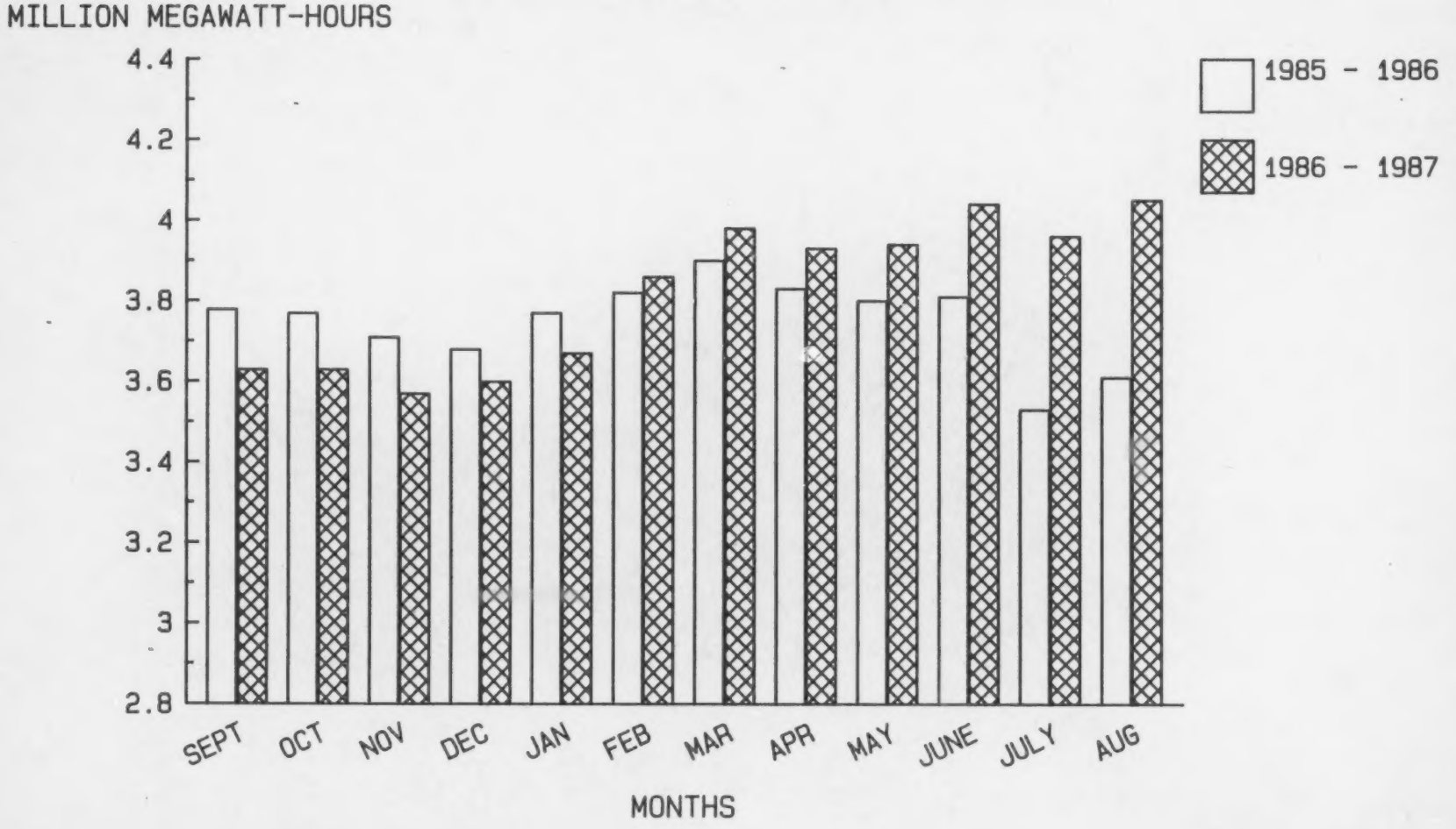
Source: The Ohio Electric Utility Institute.

FIG. 5-B. OHIO COMMERCIAL ELECTRIC CONSUMPTION 1985 - 1986 VS. 1986 - 1987



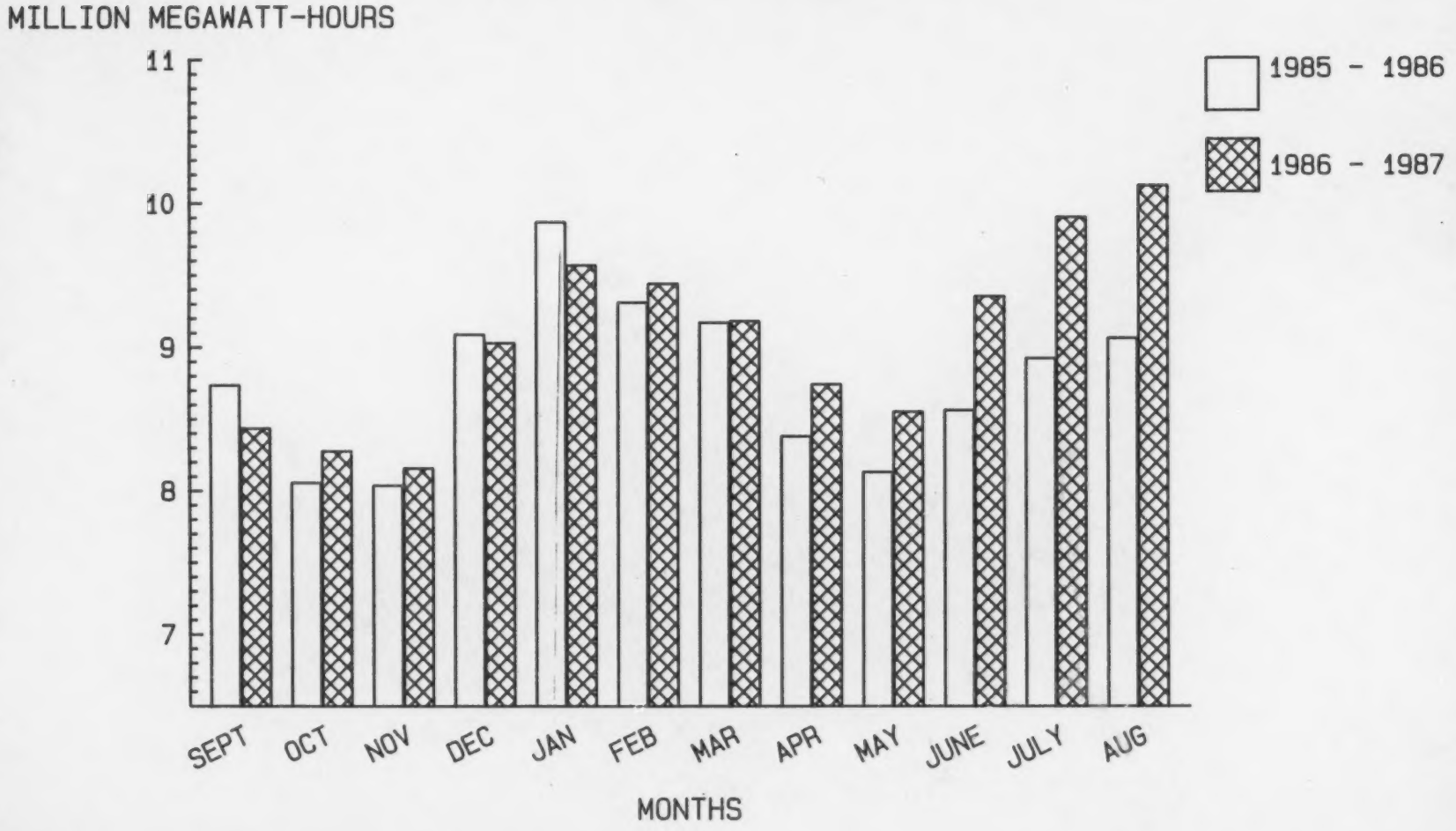
Source: The Ohio Electric Utility Institute.

FIG. 5-C. OHIO INDUSTRIAL ELECTRIC CONSUMPTION 1985 - 1986 VS. 1986 - 1987



Source: The Ohio Electric Utility Institute.

FIG. 5-D. OHIO TOTAL ELECTRIC CONSUMPTION
1985 - 1986 VS. 1986 - 1987



Source: The Ohio Electric Utility Institute.

FIG. 5–E. MONTHLY ELECTRICITY CONSUMPTION

(JANUARY 1976 – AUGUST 1987)

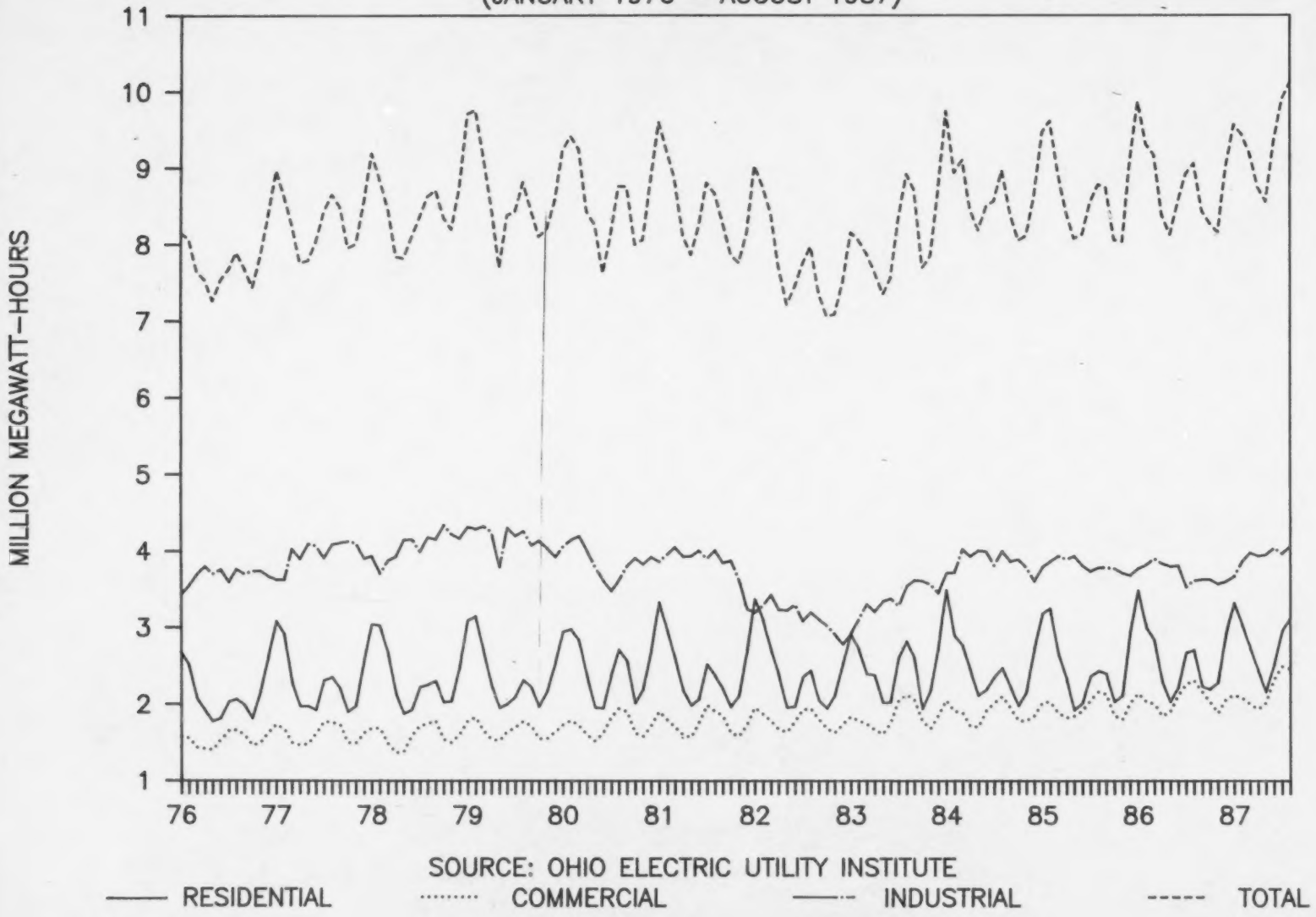


Table 7-A. Ohio Electric Utilities' Projected Deliveries, Consumption, and Stocks of Coal for Electricity Generation, 1987-1988. (1000 Short Tons)

	November	December	January	February	March	April	May	June	July	August	September	October	Total
Allegheny Power System													
Deliveries	1,398	1,615	1,388	1,209	1,104	1,034	1,037	1,087	1,171	1,244	1,235	1,391	15,153
Consumption	1,232	1,362	1,628	1,485	1,421	1,281	1,266	1,297	1,484	1,494	1,264	1,267	16,481
Stocks	3,654	3,907	3,667	3,391	3,074	2,827	2,618	2,408	2,095	1,845	1,836	1,960	
American Electric Power													
Deliveries	3,301	3,384	3,441	3,091	3,128	3,053	3,154	2,975	2,600	3,286	3,274	3,358	38,245
Consumption	3,072	3,576	3,820	3,514	3,449	3,132	3,122	3,414	3,718	3,764	3,475	3,358	41,614
Stocks	13,857	13,665	13,286	12,863	12,542	12,463	12,495	12,056	10,938	10,460	10,259	10,259	
Buckeye Power Inc.													
Deliveries	171	185	194	148	159	161	160	152	134	167	163	156	1,950
Consumption	197	202	127	121	136	138	193	187	187	183	96	156	1,923
Stocks	401	384	451	478	501	524	491	456	403	387	454	454	
Cincinnati Gas & Electric													
Deliveries	453	546	714	366	441	471	450	534	591	561	498	459	6,084
Consumption	422	517	684	570	607	471	450	534	590	561	499	459	6,364
Stocks	1,215	1,244	1,274	1,070	904	904	904	904	905	905	904	904	
Cleveland Electric Illuminating													
Deliveries	418	394	428	264	254	317	336	316	319	329	289	282	3,946
Consumption	339	321	341	383	408	370	357	317	326	334	294	282	4,072
Stocks	781	854	941	822	668	615	594	593	586	581	576	576	
Dayton Power and Light													
Deliveries	602	616	785	656	724	579	564	623	671	694	581	645	7,740
Consumption	602	616	712	656	724	579	564	623	671	694	581	645	7,667
Stocks	1,060	1,060	1,133	1,133	1,133	1,133	1,133	1,133	1,133	1,133	1,133	1,133	
Ohio Edison													
Deliveries	739	741	725	551	541	533	533	538	525	536	542	570	7,074
Consumption	606	696	725	578	609	577	580	597	571	595	543	565	7,242
Stocks	1,452	1,497	1,497	1,470	1,402	1,358	1,311	1,252	1,206	1,147	1,146	1,151	
Ohio Valley Electric Corp													
Deliveries	729	739	554	532	556	536	565	566	609	601	541	588	7,116
Consumption	633	643	617	594	618	598	627	629	671	664	603	651	7,548
Stocks	1,887	1,983	1,920	1,858	1,796	1,734	1,672	1,609	1,547	1,484	1,422	1,359	
Toledo Edison													
Deliveries	125	128	131	72	85	143	136	92	100	105	109	97	1,323
Consumption	105	108	121	148	162	147	138	108	110	114	105	97	1,463
Stocks	370	390	400	324	247	243	241	225	215	206	210	210	

NOTE: NUMBERS MAY NOT SUM TO TOTAL DUE TO INDEPENDENT ROUNDING

Source: ODOE Form SE-3.

Table 7-B. Ohio Electric Utilities' Projected Deliveries, Consumption, and Stocks of Oil for Electricity Consumption, 1987-1988 (1000 Bbls.)

	November	December	January	February	March	April	May	June	July	August	September	October	Total
Allegheny Power System													
Deliveries	0	0	0	0	0	0	0	0	0	0	0	0	0
Consumption	0	0	0	0	0	0	0	0	0	0	0	0	0
Stocks	130	130	130	130	130	130	130	130	130	130	130	130	
American Electric Power System													
Deliveries	40	39	48	48	39	34	37	46	53	37	54	47	562
Consumption	40	39	48	48	39	34	37	46	53	37	54	47	562
Stocks	231	231	231	231	231	231	231	231	231	231	231	231	
Buckeye Power System													
Deliveries	2	2	3	4	3	2	2	2	2	2	2	2	28
Consumption	2	2	3	4	3	2	2	2	2	2	2	2	28
Stocks	11	11	11	11	11	11	11	11	11	11	11	11	
Cincinnati Gas and Electric													
Deliveries	8	0	10	0	20	20	10	10	20	20	0	8	126
Consumption	7	6	11	10	18	16	16	9	15	17	7	8	140
Stocks	76	70	69	59	61	65	59	60	65	68	61	61	
Cleveland Electric Illuminating													
Deliveries	29	14	23	52	54	57	43	24	26	30	23	21	396
Consumption	29	14	23	52	54	57	43	24	26	30	23	21	396
Stocks	138	138	138	138	138	138	138	138	138	138	138	138	
Dayton Power and Light													
Deliveries	2	1	1	1	1	1	1	1	1	3	1	1	15
Consumption	4	2	5	2	2	3	2	2	3	2	3	3	33
Stocks	288	287	283	282	281	279	278	277	275	276	274	272	
Ohio Edison													
Deliveries	3	3	5	0	0	0	0	2	3	2	0	0	18
Consumption	3	3	5	0	0	0	0	2	3	2	0	0	18
Stocks	40	40	40	40	40	40	40	40	40	40	40	40	
Ohio Valley Electric Corp.													
Deliveries	2	2	2	2	2	2	2	2	2	2	2	2	24
Consumption	2	2	2	2	2	2	2	2	2	2	2	2	24
Stocks	6	6	6	6	6	6	6	6	6	6	6	6	
Toledo Edison													
Deliveries	2	1	3	10	10	11	9	5	4	5	4	3	67
Consumption	2	1	3	10	10	11	9	5	4	5	4	3	67
Stocks	6	6	6	6	6	6	6	6	6	6	6	6	

Source: PUCO Form SE-3.

TABLE 7-C ELECTRIC UTILITIES' GENERATION FORECAST, FUEL ASSESSMENT AND INVENTORY MODEL
(NOVEMBER 1987 - OCTOBER 1988)

ALLEGHENY POWER SYSTEM

	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	TOTAL
DEMAND FORECAST(GWH) EST DEMAND GEN BY COAL	3121	3466	4160	3798	3630	3238	3228	3295	3765	3801	3207	3224	41933
PROJ DAILY CONSUMPTION COAL (1000 TONS)	41	44	53	51	46	43	41	43	48	48	42	41	
COAL DELIVERIES IN 1000 TONS	1598	1615	1388	1209	1104	1034	1057	1087	1171	1244	1255	1391	15153
END OF MONTH STOCK COAL (1000 TONS)	3654	3907	3667	3391	3074	2827	2618	2408	2095	1845	1836	1960	
NUMBER OF DAYS SUPPLY COAL	89	89	70	66	67	66	64	56	44	38	44	48	

AMERICAN ELECTRIC POWER SYSTEM

	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	TOTAL
DEMAND FORECAST(GWH) EST DEMAND GEN BY COAL	7401	8518	9093	8316	8177	7428	7677	8062	8675	8782	8077	8325	98531
PROJ DAILY CONSUMPTION COAL (1000 TONS)	102	115	123	121	111	104	101	114	120	121	116	115	
COAL DELIVERIES IN 1000 TONS	3301	3384	3441	3091	3128	3053	3154	2975	2600	3286	3274	3558	38245
END OF MONTH STOCK COAL (1000 TONS)	13857	13663	13286	12863	12542	12463	12495	12056	10938	10460	10259	10259	
NUMBER OF DAYS SUPPLY COAL	135	118	108	106	113	119	124	106	91	86	89	89	

TABLE 7-C ELECTRIC UTILITIES' GENERATION FORECAST, FUEL ASSESSMENT AND INVENTORY MODEL
(NOVEMBER 1987 - OCTOBER 1988)

CINCINNATI GAS & ELECTRIC

	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	TOTAL
DEMAND FORECAST(GWH)													
EST DEMAND GEN BY COAL	994	1204	1608	1332	1398	1083	1034	1221	1351	1281	1141	1049	14696
PROJ DAILY CONSUMPTION COAL (1000 TONS)	14	17	22	20	20	16	15	18	19	18	17	15	
COAL DELIVERIES IN 1000 TONS	453	546	714	366	441	471	450	534	591	561	498	459	6084
END OF MONTH STOCK COAL (1000 TONS)	1215	1244	1274	1070	904	904	904	904	905	905	904	904	
NUMBER OF DAYS SUPPLY COAL	86	75	58	54	46	58	62	51	48	50	54	61	

CLEVELAND ELECTRIC ILLUMINATING COMPANY

	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	TOTAL
DEMAND FORECAST(GWH)													
EST DEMAND GEN BY COAL	766	718	797	908	964	877	843	746	762	779	688	657	9505
PROJ DAILY CONSUMPTION COAL (1000 TONS)	11	10	11	13	13	12	12	11	11	11	10	9	
COAL DELIVERIES IN 1000 TONS	418	394	428	264	254	317	336	316	319	329	289	282	3946
END OF MONTH STOCK COAL (1000 TONS)	781	854	941	822	668	613	594	593	586	581	576	576	
NUMBER OF DAYS SUPPLY COAL	69	82	86	62	51	50	52	56	56	54	59	63	

TABLE 7-C ELECTRIC UTILITIES' GENERATION FORECAST, FUEL ASSESSMENT AND INVENTORY MODEL
(NOVEMBER 1987 - OCTOBER 1988)

DAYTON POWER & LIGHT

	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	TOTAL
DEMAND FORECAST(GWH)													
EST DEMAND GEN BY COAL	1434	1448	1694	1567	1727	1382	1323	1471	1600	1656	1376	1350	18228
PROJ DAILY CONSUMPTION COAL (1000 TONS)	20	20	23	23	23	19	18	21	22	22	19	21	
COAL DELIVERIES IN 1000 TONS	602	616	785	656	724	579	564	623	671	694	581	645	7740
END OF MONTH STOCK COAL (1000 TONS)	1060	1060	1133	1133	1133	1133	1133	1133	1133	1133	1133	1133	
NUMBER OF DAYS SUPPLY COAL	53	53	49	50	49	59	62	55	52	51	59	54	

ONIO EDISON SYSTEM

	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	TOTAL
DEMAND FORECAST(GWH)													
EST DEMAND GEN BY COAL	1382	1581	1662	1331	1404	1333	1343	1367	1305	1371	1248	1305	16632
PROJ DAILY CONSUMPTION COAL (1000 TONS)	20	22	23	20	20	19	19	20	18	19	18	18	
COAL DELIVERIES IN 1000 TONS	739	741	725	551	541	533	533	538	525	536	542	570	7074
END OF MONTH STOCK COAL (1000 TONS)	1452	1497	1497	1470	1402	1358	1311	1252	1206	1147	1146	1151	
NUMBER OF DAYS SUPPLY COAL	72	67	64	74	71	71	70	63	65	60	63	63	

TABLE 7-C ELECTRIC UTILITIES' GENERATION FORECAST, FUEL ASSESSMENT AND INVENTORY MODEL
(NOVEMBER 1987 - OCTOBER 1988)

OHIO VALLEY ELECTRIC CORPORATION

	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	TOTAL
DEMAND FORECAST(GWH) EST DEMAND GEN BY COAL	1471	1534	1471	1412	1477	1424	1473	1440	1540	1518	1396	1520	17676
PROJ DAILY CONSUMPTION COAL (1000 TONS)	21	21	20	20	20	20	20	21	22	21	20	21	
COAL DELIVERIES IN 1000 TONS	729	739	554	532	556	536	565	566	609	601	541	588	7116
END OF MONTH STOCK COAL (1000 TONS)	1887	1983	1920	1858	1796	1734	1672	1609	1547	1484	1422	1359	
NUMBER OF DAYS SUPPLY COAL	89	96	96	91	90	87	83	77	71	69	71	65	

TOLEDO EDISON

	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	TOTAL
DEMAND FORECAST(GWH) EST DEMAND GEN BY COAL	284	288	321	395	434	391	365	284	287	299	275	256	3879
PROJ DAILY CONSUMPTION COAL (1000 TONS)	4	3	4	5	5	5	4	4	4	4	4	3	
COAL DELIVERIES IN 1000 TONS	125	128	131	72	85	143	136	92	100	105	109	97	1323
END OF MONTH STOCK COAL (1000 TONS)	370	390	400	324	247	243	241	225	215	206	210	210	
NUMBER OF DAYS SUPPLY COAL	106	112	102	63	47	50	54	63	61	56	60	67	

3 NATURAL GAS

Natural gas distribution companies operating in Ohio are classified into two categories with respect to their reporting requirements. Eight major companies, Cincinnati Gas and Electric, Columbia Gas of Ohio, Dayton Power and Light, East Ohio Gas, National Gas and Oil, Ohio Gas, River Gas, and West Ohio Gas, report to the PUCO, Division of Forecasting and Siting every month. Eighteen small utilities and two municipal utilities report twice a year. This section is based upon the most recent reports of these utilities.

3.1 Supplies and Distribution

3.1.1 Sources of Supply

The major sources of natural gas supplies to the State of Ohio are presented in Table 8, and the quantities supplied are shown graphically in Figure 6. Table 9 presents the total natural gas requirements of each of the Ohio utilities and the State total.

From September 1986 through August 1987, the eight major gas distribution companies of Ohio, which together accounted for 98.17 percent of the reported natural gas distribution in the State, procured 571,236 MMCF of natural gas to meet Ohio's requirements. This represents a 9.00 percent decrease in the procurement of natural gas to Ohio compared to the same period in the previous twelve months. A substantial portion of this decrease in procurement is due to the increase in the practice of commercial and industrial customers purchasing gas directly from the wellhead. This increase in non-tariff natural gas consumption is presented in Tables 15-A and 15-B.

Of the 571,236 MMCF of natural gas procured by these companies, interstate gas purchases and synthetic natural gas (SNG) comprise 89.43 percent. Purchases of Ohio gas comprise the remaining 10.57 percent of the total. The 60,406 MMCF of Ohio production of natural gas purchased by the eight major gas utilities from September 1986 through August 1987 represents a 9.22 percent decrease in their purchases of Ohio's product from the preceding annual period. This amount

corresponds to approximately 33.18 percent of the State's total production of 182,072 MMCF in calendar year 1986. Most of the remainder of Ohio natural gas production is transported directly to industrial end-users under the industrial self-help programs instituted by the PUCO in 1974.

Domestic interstate gas is the major source of supply for Ohio. Columbia Gas Transmission Corporation and Consolidated Gas Supply Corporation provided 42.0 percent of the natural gas supplied to the eight major Ohio gas distribution companies from September 1986 through August 1987.

3.1.2 Distribution

Service shares of the gas distribution companies operating in Ohio are presented in Table 9 for the annual period September 1986 through August 1987. During this period, the four large distribution companies - Cincinnati Gas and Electric, Columbia Gas of Ohio, Dayton Power and Light and East Ohio Gas - jointly distributed 94.07 percent of the reported natural gas requirements of the State. The four intermediate sized companies - National Gas and Oil, Ohio Gas, River Gas and West Ohio Gas - distributed an additional 4.09 percent. The remaining 1.84 percent of the reported natural gas requirements were distributed by 18 small utilities and two municipal utilities. Total requirements of 581,897 MMCF reported in Table 9 represent a decrease of approximately 9.76 percent in the distribution of natural gas compared to the same period last year.

The behavior of monthly sectoral requirements between September 1986 and August 1987 versus the preceding annual period are comparatively presented in Figures 7-A through 7-C. As these Figures illustrate, residential sector requirements decreased 1.95 percent, commercial sector requirements decreased 9.91 percent and industrial sector requirements decreased a dramatic 46.54 percent (this does not include industrial requirements met through the self-help program or other direct purchases by industrial end-users, i.e. non-tariff sales). Figure 7-D combines the three sectors to comprise the total consumption for the State which, as mentioned above, decreased 9.76 percent from the previous year. Figure 7-E reveals the monthly relationship of each sector to the total requirement trend, from January 1977 through August 1987.

3.2 Historical Behavior of Interstate Natural Gas Supplies and Sectoral End-Use Requirements

3.2.1 Interstate Natural Gas Supplies

Until 1978, wellhead prices paid by interstate transmission companies to natural gas producers were under federal control. Starting in the early seventies, and especially after the OPEC oil price increase of 1973, the federally-regulated gas supply prices for interstate commerce lagged behind the unregulated prices which the product commanded at the wellhead for intrastate commerce. Consequently, there were supply shortages in the interstate natural gas markets during the heating season, whereas producing states such as Texas and Louisiana experienced an overabundance of supplies at all times.

In Ohio, which was about 90 percent dependent on interstate gas, a ban was imposed upon new customer hook-ups in 1972 which remained in effect until 1978. Similarly, base allocations of lower priority industrial and commercial customers were curtailed between 1973 and 1978. During the winter of 1976-77, many interstate pipeline companies had to heavily curtail base allocations of their industrial customers due to lack of interstate gas supplies.

The Natural Gas Policy Act (NGPA) of 1978, deregulated some gas prices immediately, and legislated a phased decontrol of prices for many categories of natural gas by 1985. Pursuant to the passage of the NGPA, relatively unfettered increases in interstate gas prices have stimulated new and more costly gas production from deep wells, thus increasing available supplies. However, many pipeline companies overreacted to market conditions by entering into extensive take or pay contracts for the newly found and expensive deep gas reserves.

Increasing energy prices from 1972 induced intensive conservation efforts on the part of consumers, as well as many state, federal and private agencies. As a result of these price induced conservation efforts, per customer consumption in general, and per customer natural gas consumption in particular, have declined almost continuously since 1972-1973. With the additional unfettered increases in natural gas costs of interstate pipeline companies between 1978-1982, the price of natural gas supplied by them rose well above the market equilibrium level dictated

by the prevailing per customer demands and the enhanced availability of supplies.

This situation led to the development of a spot market for natural gas, where the price for large volume purchases was substantially lower than the price that interstate natural gas companies could offer due to their take or pay costs which required payment regardless of whether or not they actually distributed the gas. Consequently, increasing numbers of industrial customers obtained their requirements through direct purchases at the wellhead or through the spot market. The interstate pipelines and natural gas distribution utilities are being increasingly relegated to the position of common carriers of the natural gas of others. Recent FERC rulings have been supportive of this opening up of a regulated market to competitive pressures.

Since 1983, declining per customer requirements, enhanced supplies, and the thriving spot market have induced a downturn in natural gas prices to end-users in all sectors

3.2.2 Annual Sectoral End-Use Requirements

Long-term trends in annual sectoral natural gas prices and sectoral natural gas requirements for Ohio are presented in Tables 10 and 11, and Figures B-5 through B-8. It is clear from these figures that the dynamic behavior of natural gas markets in Ohio have been characterized by increasing price trends from 1973 to 1983 and declining requirement trends since 1973.

As discussed in the preceding section, between 1970 and 1983, in response to a series of worldwide price shocks including the OPEC oil price increases of 1973 and 1978, the price of natural gas in Ohio increased nearly sevenfold in the residential and commercial sectors, and ninefold in the industrial sector (see Table 10). These price increases far exceeded the increase in the rate of inflation (see Table 11), or the rate of increase of the gross state product. Such significant and sustained increases in sectoral prices have induced significant and sustained conservation efforts among sectoral customers, which in turn have been translated into declining sectoral requirement trends.

In recent years industrial non-tariff sales, such as self-help procurements, have come to account for an ever increasing share of the total industrial requirement in Ohio (see Tables 15-A and 15-B). This is due to the fact that non-tariff sales

prices are determined in the spot market and ar than the regulated prices for industrial tariff sales. The latter category of sales has to reflect fully the fixed and variable costs of gas procurement and distribution, including take or pay contract costs and distribution company revenue requirements.

It should be noted, however, that the declining trends in industrial sector requirements represent not only the net outcomes of price induced energy conservation and fuel switching programs, but also a permanent loss in industrial capacity, especially in the older and more energy intensive manufacturing industries of the economy.

3.2.3 Monthly Sectoral End-Use Requirements

The monthly time series behavior of residential, commercial, industrial and total natural gas requirements in Ohio from January 1977 through October 1987, along with the Division's independent forecasts for November 1987 through October 1988 are displayed in Figures B-1 through B-4. The seasonal variations in residential and commercial requirements can easily be discerned from these Figures as natural gas is the primary source of space heating in Ohio. Demand peaks in all sectors during the heating season and falls off during the cooling season. (It may be of interest to note the dramatic effects of the curtailments imposed on the industrial sector during the 1976-77 heating season which is clearly discernable in Figure B-3, at x-coordinate 1977.)

3.3 Utility Forecasts: Consolidated Results and Twelve Month Outlook

3.3.1 Consolidated Results

Aggregate supply and demand projections of the eight major utilities, as presented in Table l2 and Figure 8, indicate a 0.0 percent annual surplus of natural gas supplies over requirements. All eight utilities project supply to be exactly equal to requirements during the 1987-1988 heating season. Supply and demand projections of the individual utilities, as submitted in their "Monthly Reports of

Supply and Demand of Natural Gas", are summarized in Appendix B, Table B-9.

Table 13 shows the actual aggregate monthly sectoral requirements for the eight major utilities from September 1986 through August 1987, along with the utility companies' consolidated projections for the September 1987 through August 1988 period. The companies consolidated forecast, interestingly, shows increases in demand in the residential, commercial and industrial sectors. Figure 9 is a graphic presentation of the utilities' consolidated sectoral projections for the forecast period. Overall, the consolidated companies' forecast of total annual gas requirements shows an increase of 6.72 percent relative to the same twelve month period last year.

Actual and company forecast aggregate supply of natural gas by source is displayed in Table 14. Delivered product from all pipeline sources is expected to increase 6.72 percent over the previous twelve month period. The majority of this supply, roughly 90.42 percent, will continue to come from out-of-state sources. Columbia Gas Transmission Corporation, by far the largest supplier to the State, is projected to supply 25.66 percent of natural gas demand.

3.3.2 Twelve Month Outlook

On the basis of the utility companies' natural gas supply and sectoral requirement projections, the outlook for the next twelve months indicates no supply shortages in Ohio, under both normal and 10 percent colder than normal weather conditions.

The PUCO, Division of Forecasting and Siting will be monitoring developments in the supplies and requirements of natural gas throughout the rest of the year and will take appropriate action if a critical situation develops. However, the Division of Forecasting and Siting's current conclusion is that prevailing conditions portend no shortages or curtailments of natural gas during the 1987-1988 heating season.

3.4 Division of Forecasting & Siting Independent Forecast

3.4.1 Methodology

The independent natural gas demand forecasts prepared by the Division of Forecasting and Siting for the eight major gas utilities serving Ohio are based upon time series analyses of sectoral requirements for each individual month of the year, between January 1970 and August 1987, adjusted for long-term annual trends, severe climatic conditions and the business cycle.

Time series models, with adjustments, yield projections that possess better statistical properties, and are at least as accurate as alternative short-term forecasting techniques. They also offer the added flexibility of being able to produce updated forecasts which reflect and incorporate specific assumptions pertaining to the prevailing climatic and economic conditions every time the most recent actual monthly requirements are reported to the Division. The utilization of an adjusted time series methodology is designed to provide a double check, thus reducing forecasting error for a more accurate and decisive diagnosis of energy requirements of the State.

3.4.2 Special Assumptions

The economic recovery experienced by the State is expected to level off throughout the forecasting horizon, with the unemployment rate remaining between 5.0 and 7.0 percent. Inflation is expected to hover between 3.0 and 5.0 percent, and the trend in natural gas prices will begin stabilizing at about the current rate.

FERC order RM85-1, which allows greater access to competively-priced gas available on the spot market, will further diminish the volume of natural gas sales to industrial customers by the utilities and increase the volume that is directly purchased by industrial customers from out-of-state sources. However, the long-term total consumption trends in the industrial sector are not expected to change significantly (i.e. the sum of tariff and non-tariff sales).

3.4.3 Results

The results obtained on the basis of the Division of Forecasting and Siting's independent forecast of sectoral requirements and the utility companies' forecasts of supplies are presented in Tables 16 through 20, for the 1987-88 heating season. Summary results presented in Table 16 indicate a potential surplus of 6.21 percent under normal weather conditions and a potential surplus of 6.25 percent in the case of a 10 percent colder than normal winter.

The Division of Forecasting and Siting's independent forecasts for the four major utilities are compared with each company's forecast for the period from September 1987 through August 1988 in Appendix B, Tables B-1 through B-4. The Division's forecasts of sectoral end-use gas requirements for Ohio are presented in Appendix B, Tables B-5 through B-8. These have been adjusted for the long-term historical trends observed in sectoral natural gas requirements in the State. Finally, for comparison, Appendix B, Table B-9 displays twelve month forecasts, produced monthly by each utility company and reported to the Division of Forecasting and Siting.

3.4.4 Long-Term Outlook

Any unexpected changes in the short-term behavior of residential and commercial requirements would mainly be associated with variations in the severity of the heating season, and alterations in the long-term trends followed by natural gas prices. Given the current abundance of natural gas supplies, the deregulation of interstate natural gas prices by the NGPA and recent FERC policies which virtually require many interstate pipeline companies to act as common carriers, no supply induced pressures on natural gas prices for the next 3 to 5 years are expected. Given the price induced conservation efforts since 1972, and the dramatic declines in per customer natural gas consumption in the residential and commercial sectors since 1972, no demand induced pressures are expected for the 3 to 5 year horizon either. Therefore, the decline in real natural gas prices observed since 1983 is expected to begin leveling off during the forecast horizon and stabilize in the near future.

In recent years, as previously explained in section 3.2.1, industrial sales of

natural gas by utility companies have decreased substantially. Part of this has been due to conservation, fuel switching and declining activity in the basic industries. Another important factor has been the emergence of the spot market for interstate gas purchases by large volume industrial customers. An increasing portion of this decline has also been the result of self-help programs administered by the PUCO and fuel oil displacement programs administered by the Federal Energy Regulatory Commission (FERC).

The State of Ohio's self-help program was initiated in 1974 to assist industrial customers whose tariff supplies of natural gas were threatened with curtailments. The program permits industrial concerns to purchase their own gas at the wellhead and have it transported directly to their location by a gas distribution company. Throughout the mid and late 1970's, industrial consumers paid unregulated prices to producers and contracted for delivery with the gas distribution companies, which charged a fee for transmission and were permitted receipt of up to 25 percent of the gas for their own customers.

Self-help gas emerged as a resource vital to the economic development of Ohio. Its cost advantage improves the competitive positions of participating industries. Also, self-help gas provides an additional market for Ohio gas producers and spurs competition in wellhead burnertip prices. In April 1983, as a result of a natural gas surplus, the PUCO amended the self-help rules to rescind distribution company privileges to acquire ownership shares of self-help gas. The difference in the cost of natural gas purchased through interstate pipeline companies versus the cost of natural gas purchased on the spot market provides the current incentive for industrial customers to purchase their own gas at the wellhead.

Federally regulated marketing programs became significant in 1983 and have added to the loss of customers mainly in industrial tariffs. Fuel oil displacement, special marketing programs regulated by FERC, and Ohio's self-help program accounted for 66.88 percent of Ohio industrial gas use in 1986. Comparatively, these programs accounted for 52.56 percent of Ohio industrial natural gas use in 1985 and 32.74 percent in 1984.

The effective price discrimination between customer categories which is introduced into the gas market through special marketing programs should help Ohio's industry by making it possible for firms to take advantage of available

input cost minimization opportunities. However, it also implies that a greater proportion of fixed costs involved in the procurement and distribution of natural gas will have to be born by industrial tariff customers, whose ranks may virtually disappear in the next decade if present trends continue. These fixed costs will also be passed on to residential and commercial customers for who may be simply prohibited from participating in these programs due to information costs, contract costs, or minimum volume requirements. The growth of non-tariff industrial sales in Ohio is documented in Tables 15-A and 15-B.

3.4.5 Emergency Response Capability

There have been no natural gas curtailments in Ohio since 1978, and neither Ohio natural gas utilities nor the gas pipeline companies project any curtailments through August 1988. However, in the event of a shortage, it is anticipated that the fuel-switching capability of industrial and large commercial users would be accelerated. Detailed emergency plans that describe strategies to respond to fuel supply shortfalls are on file at the PUCO, Division of Forecasting and Siting.

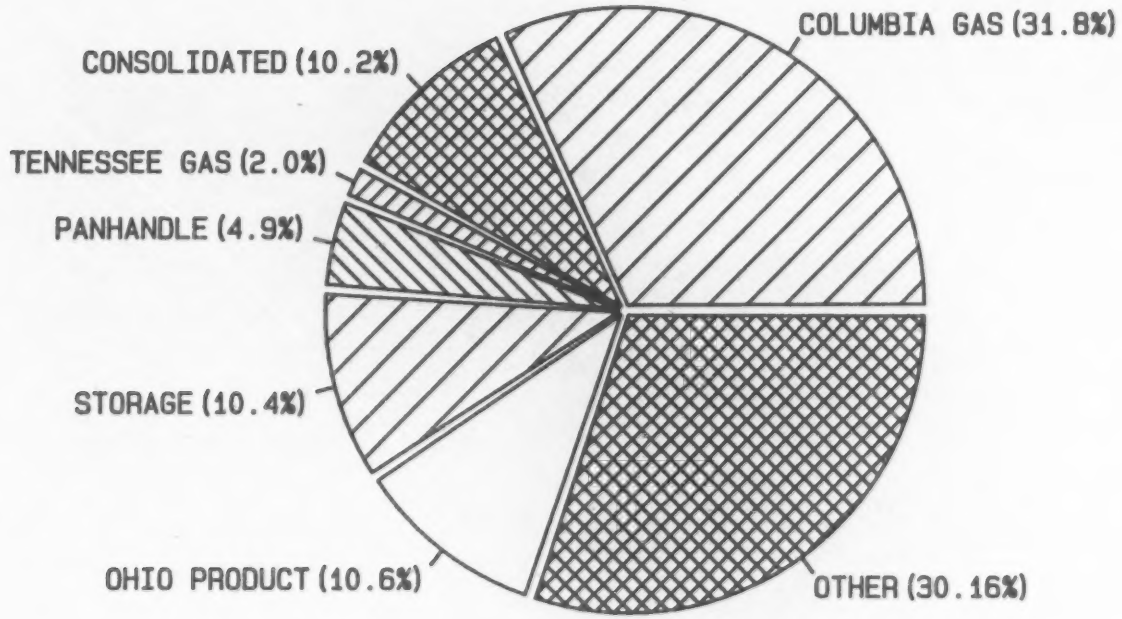
Table 8. Sources of Natural Gas Supplies to the Eight Major Gas Utilities, September 1986 through August 1987 (MMCF)

	Supply	Percent of Total	Rank
Columbia Gas Transmission Corp.	181573	31.79	1
Consolidated Gas Supply Corp.	58307	10.21	5
Lawrenceburg Gas	296	0.05	10
Michigan/Wisconsin Pipeline Co.	421	0.07	9
Panhandle Eastern Pipeline Co.	28089	4.92	6
Tennessee Gas Pipeline Co.	11114	1.95	7
Texas Eastern Transmission Corp.	2620	0.46	8
Texas Gas Transmission Corp.	125	0.02	11
Green Springs (SNG) (Columbia LNG)	0	0.00	12
Storage/Propane [1]	59443	10.41	4
Other	168842	29.56	2
Total SNG and Out-of-State	510830	89.43	
Ohio Product	60406	10.57	3
TOTAL	571236	100.00	

[1] Gas withdrawn from storage represents a source during the period under consideration.

Source: PUCO Form SG-2.

FIG. 6. SOURCES OF NATURAL GAS SUPPLY FOR EIGHT MAJOR GAS UTILITIES (SEPT. 1986 - AUG. 1987)



Source: PUCO Form SG-2.

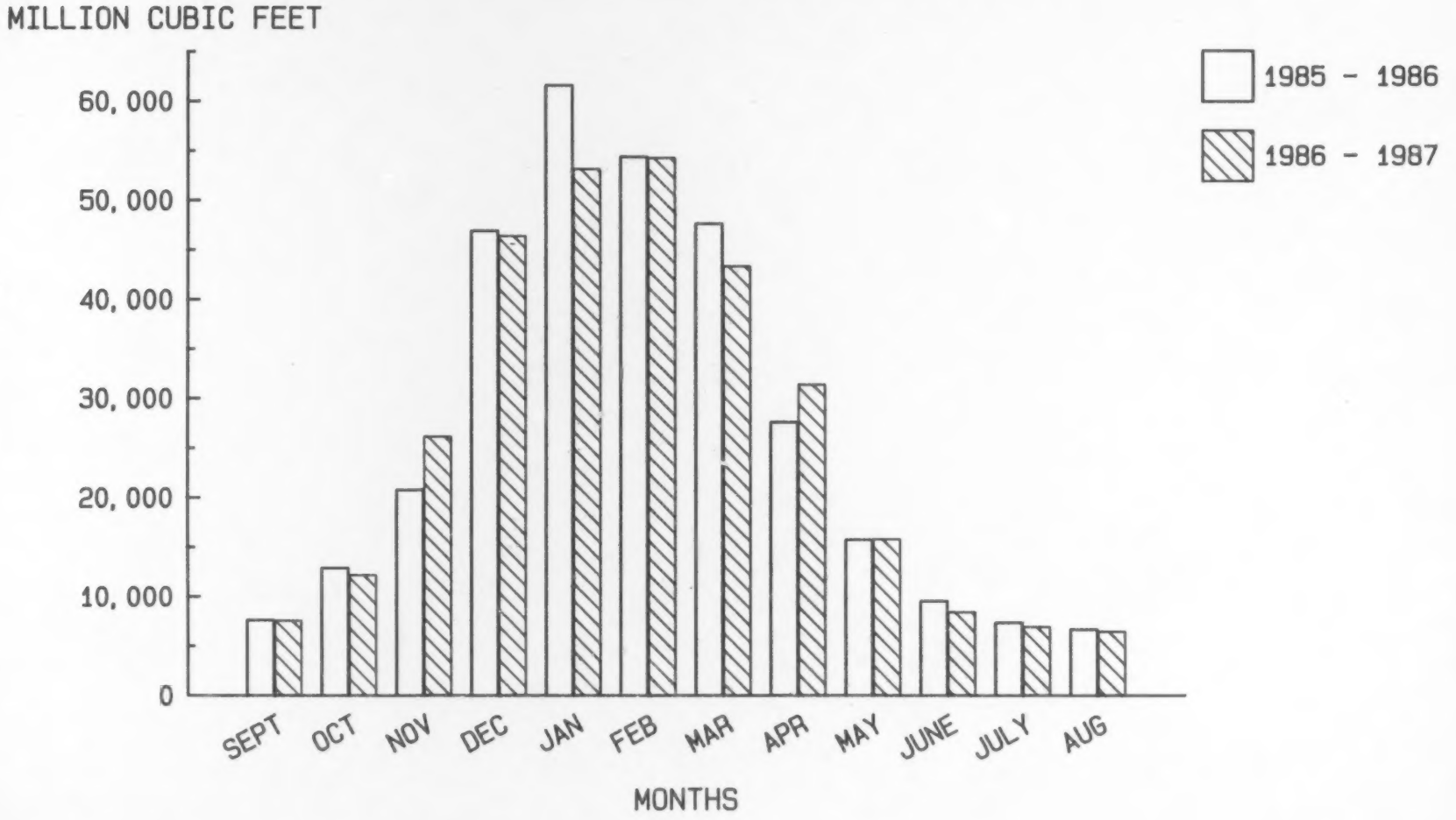
Table 9. Total Natural Gas Requirements of All Commercial Utilities in Ohio, September 1986 through August 1987 (MMCF)

	(1) Sales to All End Users	(2)[1] Storage (In)	Total Requirement (1+2)	Percent of Total Ohio Requirement
Cincinnati Gas and Electric Co.	64324	0	64324	11.05
Columbia Gas of Ohio	173000	0	173000	29.73
Dayton Power and Light Co.	47004	0	47004	8.08
East Ohio Gas Co.	204032	59069	263101	45.21
National Gas and Oil Co.	3132	695	3827	0.66
Ohio Gas Co.	7852	0	7852	1.35
River Gas Co.	2935	0	2935	0.50
West Ohio Gas Co.	9193	0	9193	1.58
Total Eight Major Utilities	511472	59764	571236	98.17
Total Small Utilities	5099	0	5099	0.88
Municipal Utilities	5562	0	5562	0.96
TOTAL ALL UTILITIES	522133	59764	581897	100.00

[1] Gas restored to storage is a requirement of the State's natural gas utilities.

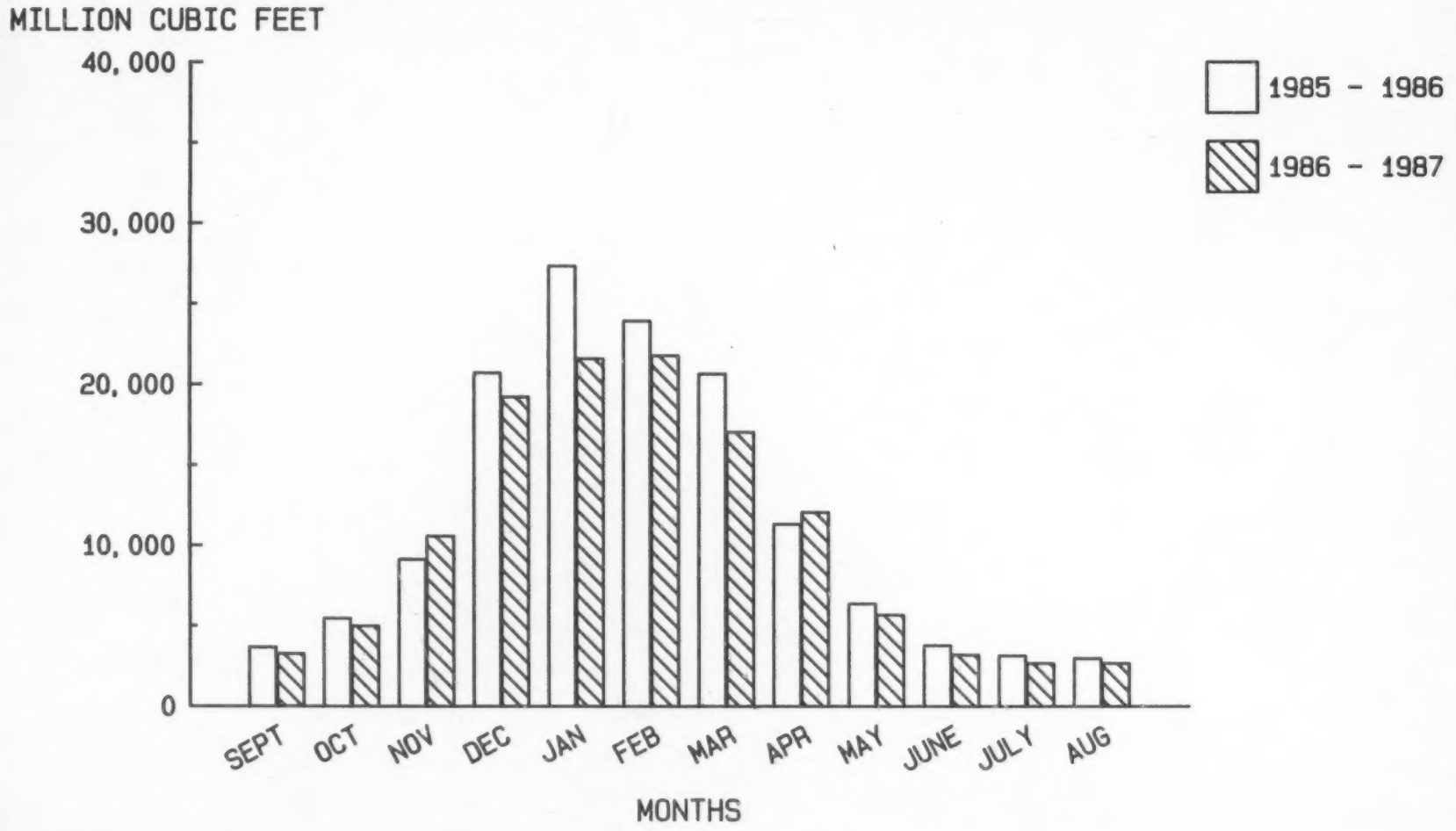
Source: PUCO Form SG-2 and SG-4.

FIG. 7-A. OHIO RESIDENTIAL SECTOR NATURAL GAS CONSUMPTION: 1985 - 1986 VS. 1986 - 1987



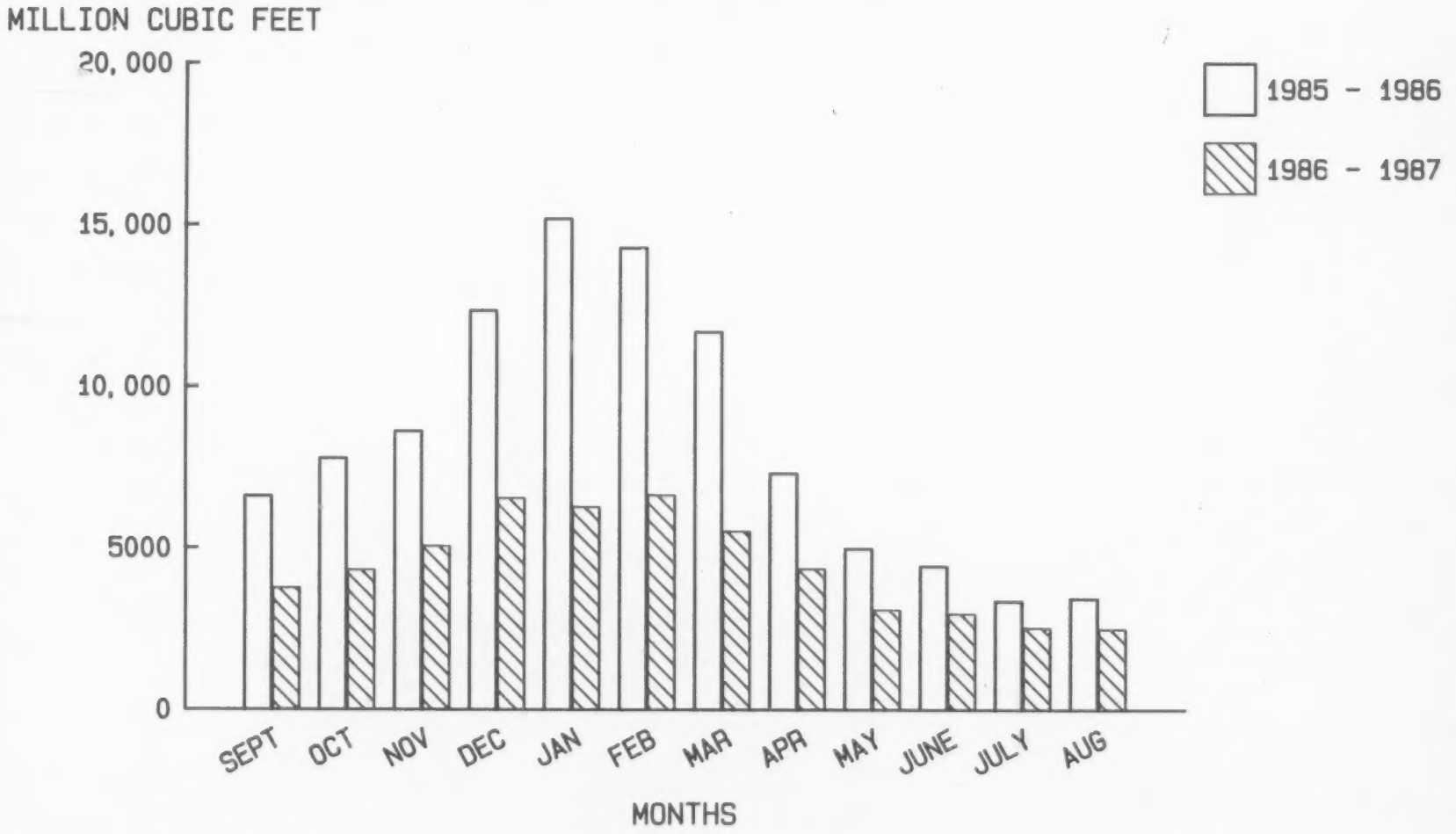
Source: The Division of Forecasting and Siting.

FIG. 7-B. OHIO COMMERCIAL SECTOR NATURAL GAS CONSUMPTION: 1985 - 1986 VS. 1986 - 1987



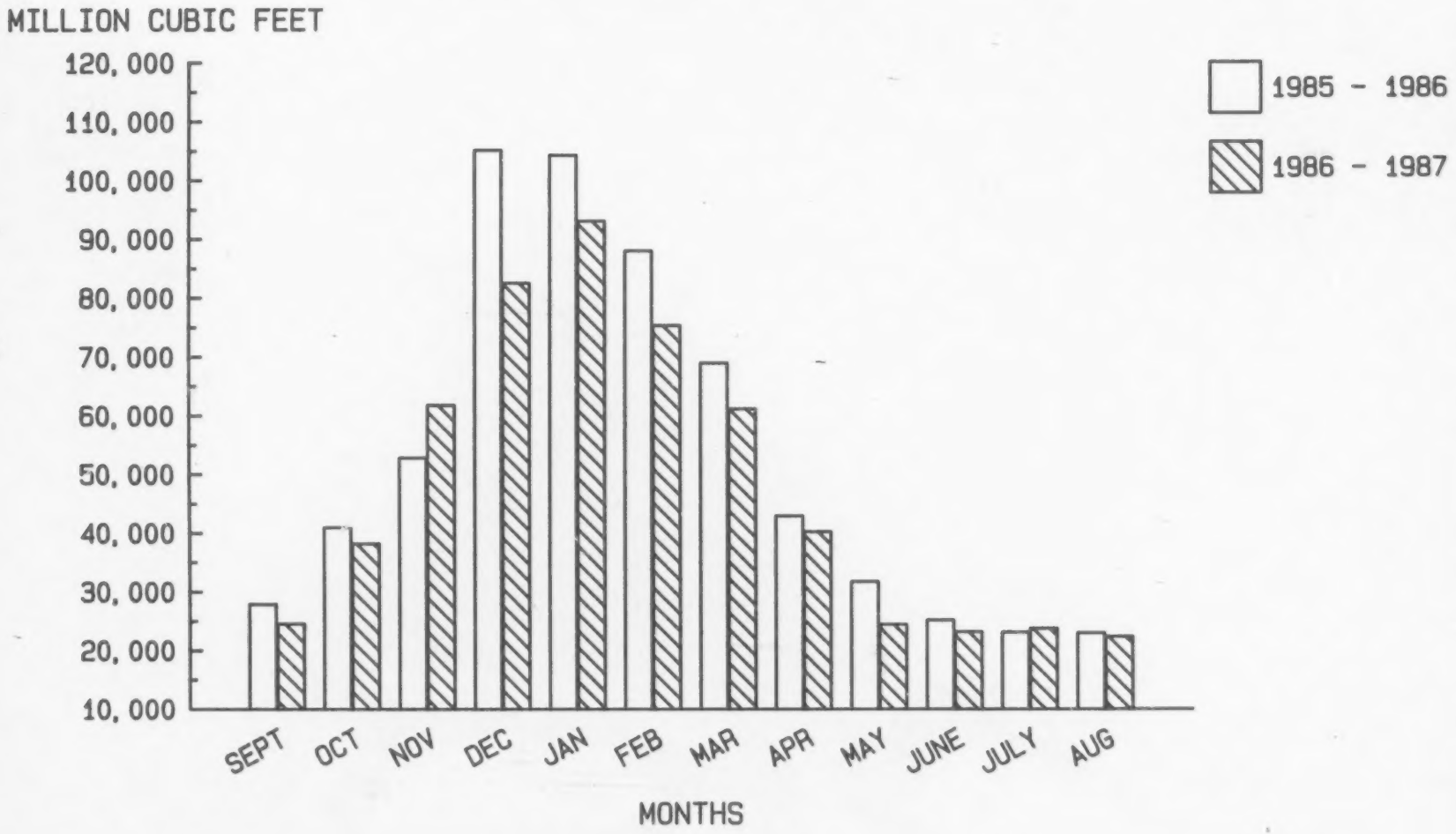
Source: The Division of Forecasting and Siting.

FIG. 7-C. OHIO INDUSTRIAL SECTOR NATURAL GAS CONSUMPTION: 1985 - 1986 VS. 1986 - 1987



Source: The Division of Forecasting and Siting.

FIG. 7-D. TOTAL OHIO NATURAL GAS CONSUMPTION: 1985 - 1986 VS. 1986 - 1987



Source: The Division of Forecasting and Siting.

FIG. 7–E. MONTHLY GAS CONSUMPTION

(JANUARY 1977 – AUGUST 1987)

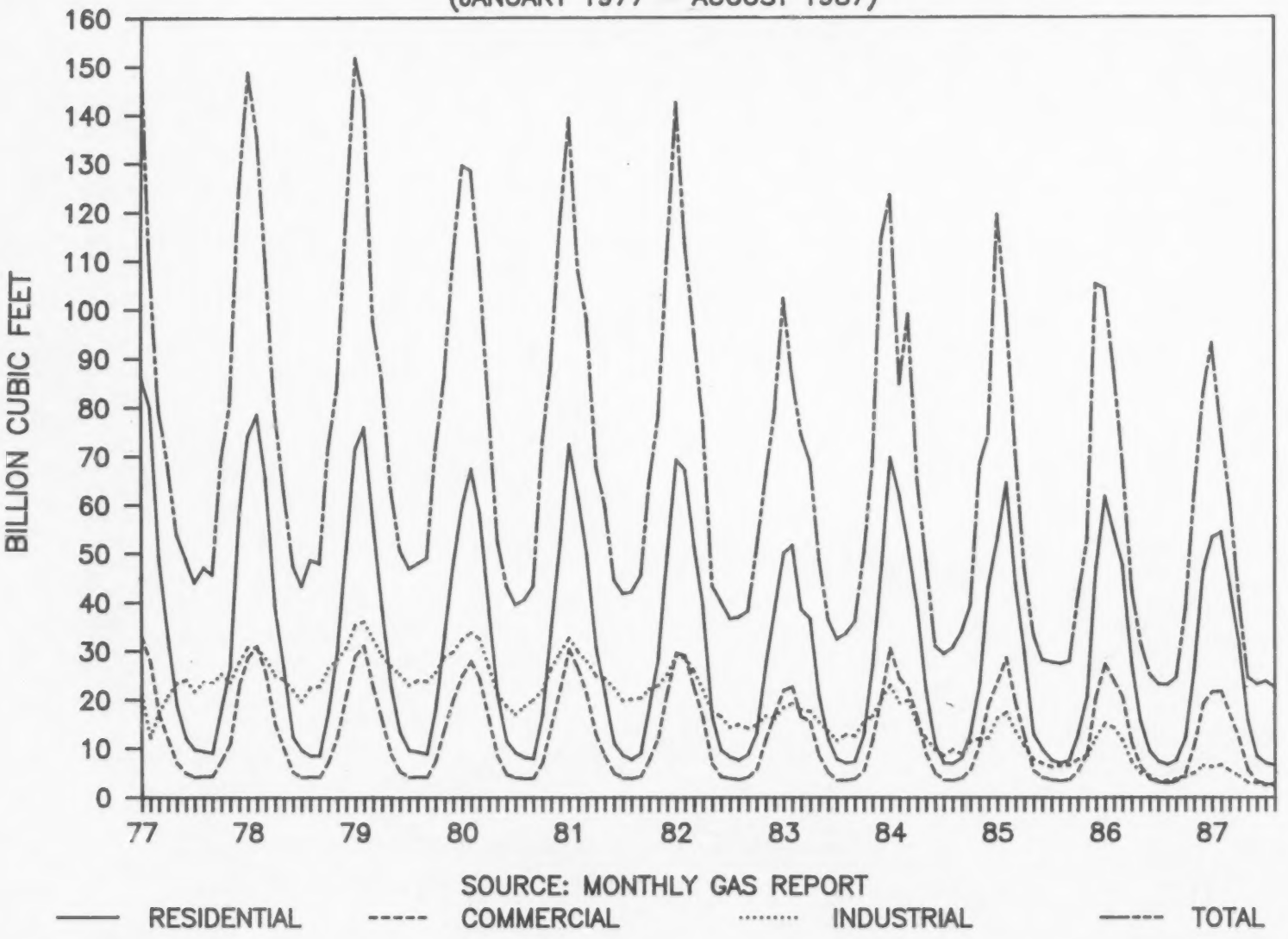


Table 10. Ohio Natural Gas Prices in Current Dollars, 1970-1986
($ Per MMBtu)

Year	Residential	Commercial	Industrial
1970	0.84	0.73	0.52
1971	0.96	0.81	0.56
1972	1.02	0.86	0.62
1973	1.08	0.94	0.65
1974	1.23	1.07	0.85
1975	1.51	1.35	1.12
1976	1.79	1.63	1.43
1977	2.23	2.07	1.95
1978	2.43	2.24	2.05
1979	2.78	2.57	2.32
1980	3.45	3.23	2.97
1981	3.87	3.61	3.34
1982	4.80	4.53	4.20
1983	5.90	5.54	5.01
1984	5.86	5.49	4.87
1985	5.82	5.38	4.69
1986	5.53	5.12	4.47

Source: American Gas Association, Gas Facts, 1970-1987.

Table 11. Ohio Natural Gas Prices in Constant Dollars, 1970-1986
($ Per MMBtu)

Year	Residential	Commercial	Industrial
1970	0.72	0.63	0.45
1971	0.78	0.67	0.47
1972	0.81	0.69	0.49
1973	0.81	0.71	0.46
1974	0.83	0.72	0.58
1975	0.94	0.84	0.69
1976	1.05	0.96	0.84
1977	1.23	1.14	1.07
1978	1.24	1.15	1.05
1979	1.28	1.18	1.07
1980	1.40	1.31	1.20
1981	1.42	1.34	1.25
1982	1.66	1.57	1.45
1983	1.98	1.86	1.68
1984	1.88	1.76	1.57
1985	1.81	1.67	1.46
1986	1.68	1.60	1.36

Note: All prices are stated in terms of 1967 dollars.

Source: American Gas Association, Gas Facts, 1970-1987 and PUCO, Division of Forecasting & Siting.

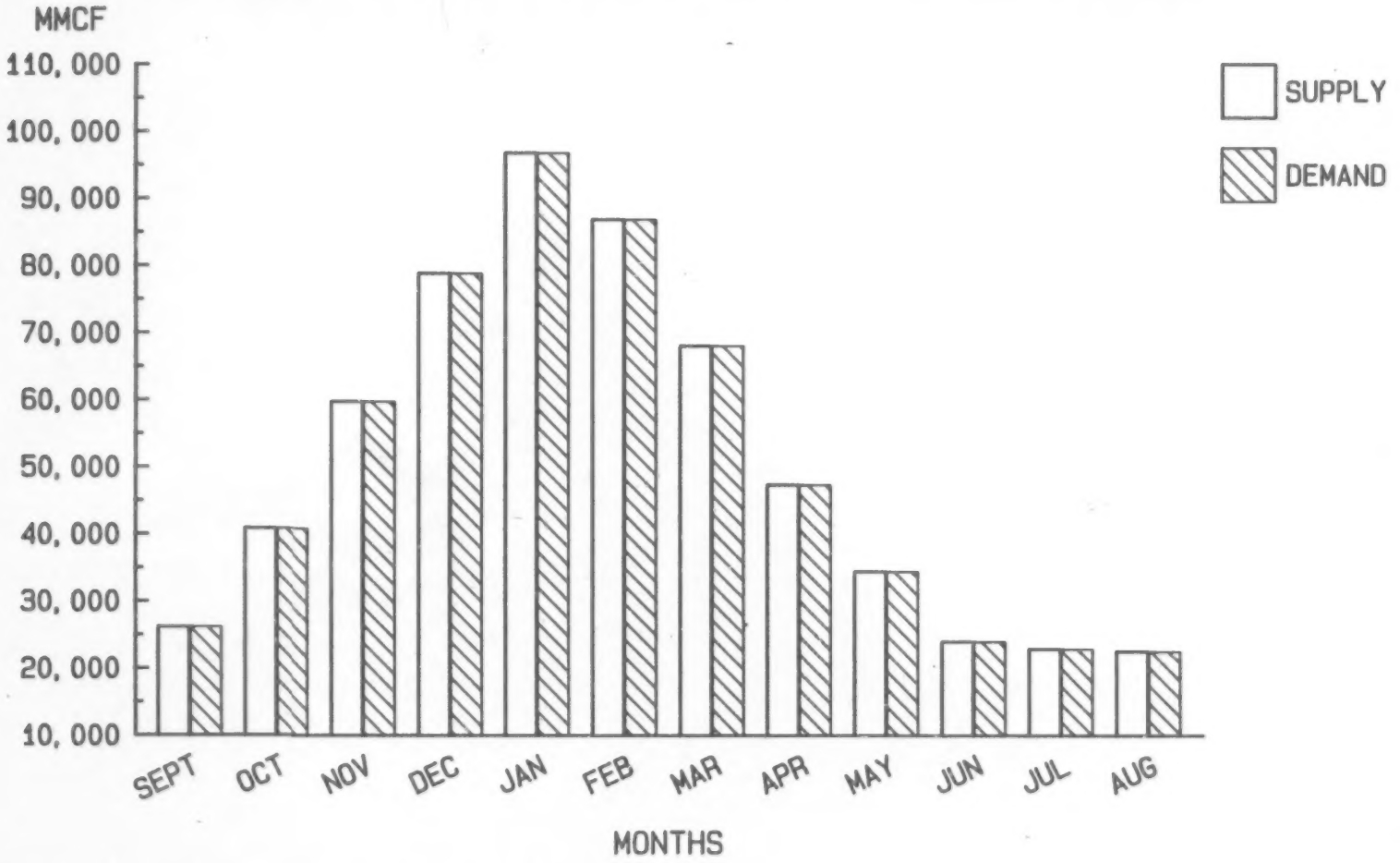
Table 12. Projected Aggregate Supply and Requirements for Natural Gas for Eight Major Utilities
September 1987 - August 1988
(MMCF)

	Supply	Demand	Deficiency	Percent Deficiency
SEPTEMBER	26277	26277	0	0.00
OCTOBER	40959	40959	0	0.00
NOVEMBER	59858	59858	0	0.00
DECEMBER	78968	78968	0	0.00
JANUARY	96881	96881	0	0.00
FEBRUARY	86962	86962	0	0.00
MARCH	68161	68161	0	0.00
APRIL	47451	47451	0	0.00
MAY	34504	34504	0	0.00
JUNE	24059	24059	0	0.00
JULY	22963	22963	0	0.00
AUGUST	22608	22608	0	0.00
TOTALS				
SUMMER	218821	218821	0	0.00
WINTER	390830	390830	0	0.00
ANNUAL	609651	609651	0	0.00

NOTE: A positive deficiency indicates a shortage;
A negative deficiency indicates a surplus.

SOURCE: PUCO FORM SG-1 and PUCO, Division of Forecasting & Siting.

FIG. 8. PROJECTED SUPPLY AND REQUIREMENTS OF NATURAL GAS BY SECTOR: TOTAL OF EIGHT MAJOR COMPANIES (SEPTEMBER 1987 - AUGUST 1988)



SOURCE: PUCO, Division of Forecasting & Siting.

TABLE 13. COMPARISON BETWEEN ONE YEAR OF ACTUAL AND FORECAST DEMAND FOR EIGHT MAJOR OHIO GAS UTILITIES BY SECTOR (MMCF)

COMPARISON BETWEEN 1 YEAR OF ACTUAL AND FORECAST DEMAND (IN MMCF) FOR 8 MAJOR OHIO GAS UTILITIES BY SECTOR

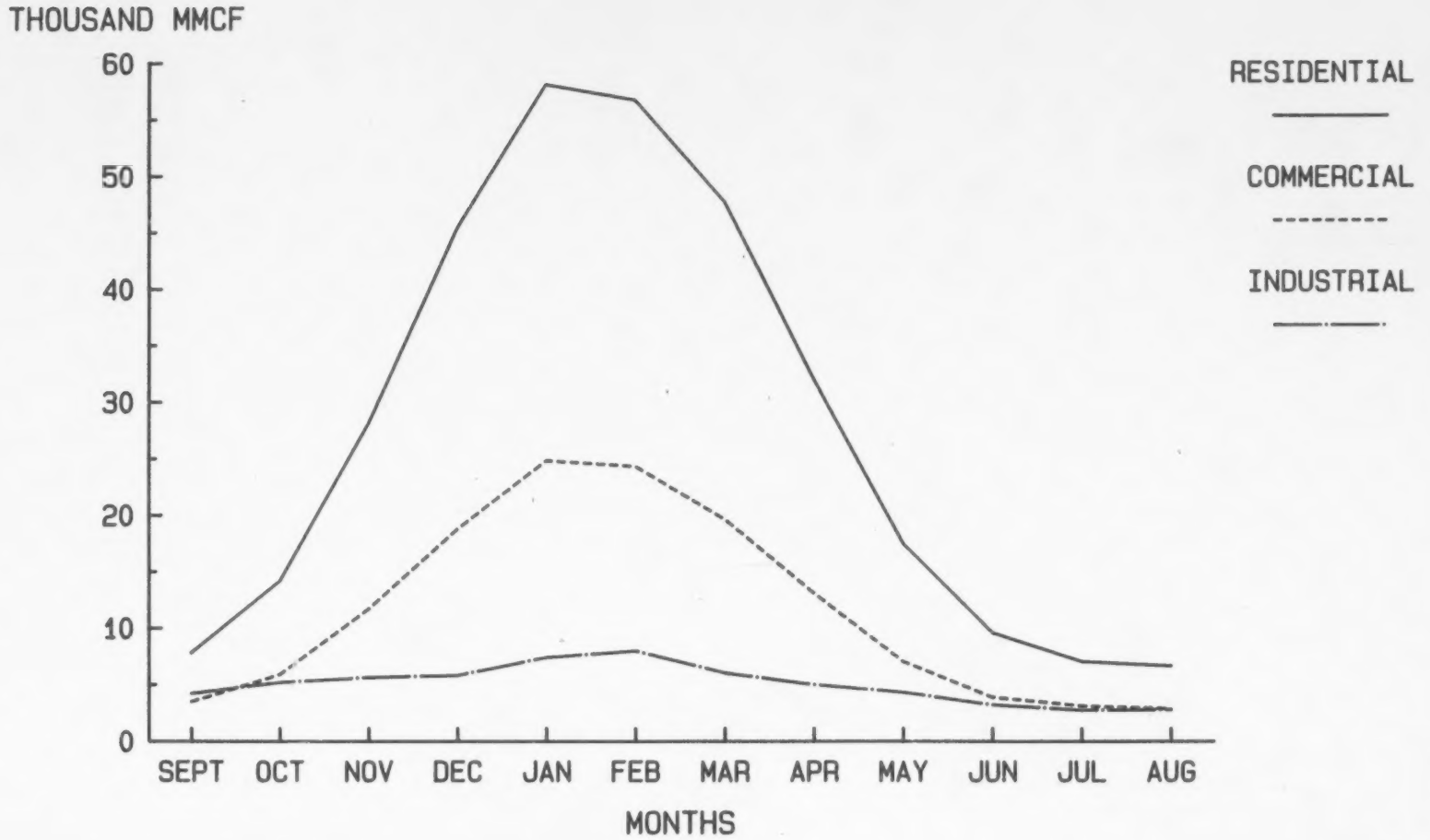
MONTH/YEAR	DEGREE DAYS	RESIDENTIAL REQUIREMENT	COMMERCIAL REQUIREMENT	INDUSTRIAL REQUIREMENT	OTHER REQUIREMENT	STORAGE (IN)	TOTAL REQUIREMENT	DEFICIENCY
9/87	87	7831	3488	4232	2166	8560	26277	0
9/86	87	7657	3306	3763	1226	8712	24664	0
	0.0%	2.3%	5.5%	12.5%	76.7%	-1.7%	6.5%	0.0%
10/87	334	14162	5901	5206	8108	7582	40959	0
10/86	334	12262	5014	4320	7963	8733	38292	0
	0.0%	15.5%	17.7%	20.5%	1.8%	-13.2%	7.0%	0.0%
11/87	690	28113	11678	5650	10559	3858	59858	0
11/86	686	26202	10598	5056	17422	2569	61847	0
	0.6%	7.3%	10.2%	11.7%	-39.4%	50.2%	-3.2%	0.0%
12/87	1052	45408	18779	5827	8954	0	78968	0
12/86	1028	46437	19231	6538	10376	0	82582	0
	2.3%	-2.2%	-2.4%	-10.9%	-13.7%	0.0%	-4.4%	0.0%
1/88	1141	58093	24812	7408	5242	1326	96881	0
1/87	1124	53194	21604	6264	12056	0	93118	0
	1.5%	9.2%	14.8%	18.3%	-56.5%	999.9%	4.0%	0.0%
2/88	980	56706	24298	7993	-3361	1326	86962	0
2/87	977	54298	21786	6635	-7387	0	75332	0
	0.3%	4.4%	11.5%	20.5%	54.5%	999.9%	15.4%	0.0%
3/88	823	47681	19597	6018	-5135	0	68161	0
3/87	814	43375	17035	5515	-5375	594	61144	0
	1.1%	9.9%	15.0%	9.1%	4.5%	-100.0%	11.5%	0.0%
4/88	735	31987	13078	4988	-6819	4217	47451	0
4/87	455	31436	12070	4358	-9781	2217	40300	0
	61.5%	1.8%	8.4%	14.5%	30.3%	90.2%	17.7%	0.0%
5/88	202	17447	7031	4297	-4021	9750	34504	0
5/87	196	15836	5696	3083	-8671	8559	24503	0
	3.1%	10.2%	23.4%	39.4%	53.6%	13.9%	40.8%	0.0%
6/88	30	9582	3865	3197	-2115	9530	24059	0
6/87	29	8488	3221	2961	-852	9406	23224	0
	3.4%	12.9%	20.0%	8.0%	-148.2%	1.3%	3.6%	0.0%
7/88	5	7020	3097	2732	482	9632	22963	0
7/87	5	7006	2700	2529	1933	9617	23785	0
	0.0%	0.2%	14.7%	8.0%	-75.1%	0.2%	-3.5%	0.0%
8/88	11	6618	2865	2781	1417	8927	22608	0
8/87	11	6540	2714	2495	1339	9357	22445	0
	0.0%	1.2%	5.6%	11.5%	5.8%	-4.6%	0.7%	0.0%
SUMMER TOTAL	1404	94647	39325	27433	-782	58198	218821	0
	1117	89225	34721	23509	-6843	56601	197213	0
	25.7%	6.1%	13.3%	16.7%	88.6%	2.8%	11.0%	0.0%
WINTER TOTAL	4686	236001	99164	32896	16259	6510	390830	0
	4629	223506	90254	30008	27092	3163	374023	0
	1.2%	5.6%	9.9%	9.6%	-40.0%	105.8%	4.5%	0.0%
YEAR TOTAL	6090	330648	138489	60329	15477	64708	609651	0
	5746	312731	124975	53517	20249	59764	571236	0
	6.0%	5.7%	10.8%	12.7%	-23.6%	8.3%	6.7%	0.0%

NOTE: (1) WINTER TOTAL IS A SUM OF THE VALUES IN NOVEMBER, DECEMBER, JANUARY, FEBRUARY, AND MARCH

(2) 999.9% REPRESENTS AN INFINITE PERCENTAGE CHANGE RESULTING FROM AN INCREASE FROM A ZERO VALUE TO SOME NON-ZERO VALUE AND THUS A DIVISION BY ZERO.

(3) A POSITIVE DEFICIENCY INDICATES SHORTAGE. A NEGATIVE DEFICIENCY INDICATES SURPLUS.

FIG 9. PROJECTED REQUIREMENTS OF NATURAL GAS BY SECTOR: EIGHT MAJOR COMPANIES (SEPT 1987 - AUG 1988)



SOURCE: PUCO, Division of Forecasting & Siting.

TABLE 14. COMPARISON BETWEEN ONE YEAR OF ACTUAL AND FORECAST SUPPLY
FOR EIGHT MAJOR OHIO GAS UTILITIES BY SOURCE
(MMCF)

COMPARISON BETWEEN 1 YEAR OF ACTUAL AND FORECAST SUPPLY (IN MMCF) FOR 8 MAJOR OHIO GAS UTILITIES BY SOURCE

MO/YR	COLUMBIA GAS	CONSOLIDATED GAS	LAWRENCEBURG	MICH. MISC.	PANHANDLE EAST	TENN. GAS	TEXAS EASTERN	TEXAS GAS	EMERG GAS	OHIO PRODUCT	SNG	STORAGE/ PROPANE	OTHER	TOTAL SUPPLIES
9/87	3620	4131	90	18	250	3299	181	8	0	5060	0	165	9463	26277
9/86	4625	6080	95	14	109	0	327	7	0	5830	0	140	7437	24664
	-21.7%	-32.1%	-5.3%	28.6%	129.4%	999.9%	-44.6%	-100.0%	0.0%	-13.2%	0.0%	17.9%	27.2%	6.5%
10/87	9496	10275	93	36	529	3408	129	0	0	5083	0	170	11740	40959
10/86	11180	9787	96	28	2061	2391	152	100	0	4678	0	138	7681	38292
	-15.1%	5.0%	-3.1%	28.6%	-74.3%	42.5%	-15.1%	-100.0%	0.0%	8.7%	0.0%	23.2%	52.8%	7.0%
11/87	15545	7868	90	40	679	0	157	0	0	5070	0	5697	24712	59858
11/86	23343	7693	6	91	5009	4355	247	9	0	4174	0	5140	11778	61847
	-33.4%	2.3%	1400.0%	-56.0%	-86.4%	-100.0%	-36.4%	-100.0%	0.0%	21.4%	0.0%	10.8%	109.8%	-3.2%
12/87	23958	3092	93	51	968	3720	278	0	0	5061	0	14535	27212	78968
12/86	35735	4118	-2	55	3898	2766	200	0	0	5577	0	15024	15211	82582
	-33.0%	-24.9%	4750.0%	-7.3%	-75.2%	34.5%	39.0%	0.0%	0.0%	-9.3%	0.0%	-3.3%	78.9%	-4.4%
1/88	31942	7454	93	73	1075	3408	258	0	0	4765	0	17350	30463	96881
1/87	41794	8691	6	75	5067	134	298	0	0	4768	0	15842	16443	93118
	-23.6%	-14.2%	1450.0%	-2.7%	-78.8%	2443.3%	-13.4%	0.0%	0.0%	-0.1%	0.0%	9.5%	85.3%	4.0%
2/88	31611	9100	87	67	904	3079	383	0	0	4723	0	12715	24293	86962
2/87	31648	7365	5	87	5196	686	262	9	0	4413	0	10655	15006	75332
	-0.1%	23.6%	1640.0%	-23.0%	-82.6%	348.8%	46.2%	-100.0%	0.0%	7.0%	0.0%	19.3%	61.9%	15.4%
3/88	25101	4559	93	48	740	0	264	0	0	4843	0	8596	23917	68161
3/87	24132	4288	7	28	4453	782	162	0	0	4959	0	8061	14272	61144
	4.0%	6.3%	1228.6%	71.4%	-83.4%	-100.0%	63.0%	0.0%	0.0%	-2.3%	0.0%	6.6%	67.6%	11.5%
4/88	9521	3197	90	37	484	0	248	0	0	4866	0	5581	23427	47451
4/87	7598	1189	5	20	524	0	178	0	0	4981	0	3440	22365	40300
	25.3%	168.9%	1700.0%	85.0%	-7.6%	0.0%	39.3%	0.0%	0.0%	-2.3%	0.0%	62.2%	4.7%	17.7%
5/88	3485	8027	93	14	268	0	111	0	0	4848	0	230	17428	34504
5/87	470	2411	5	8	205	0	71	0	0	4845	0	407	16081	24503
	641.5%	232.9%	1760.0%	75.0%	30.7%	0.0%	56.3%	0.0%	0.0%	0.1%	0.0%	-43.5%	8.4%	40.8%
6/88	752	3462	90	8	150	0	110	0	0	4701	0	165	14421	24059
6/87	485	2770	2	7	1516	0	124	0	0	5177	0	202	12941	23224
	55.1%	25.0%	4400.0%	14.3%	-90.1%	0.0%	-11.3%	0.0%	0.0%	-9.2%	0.0%	-18.3%	13.0%	3.6%
7/88	677	2182	93	10	142	0	315	0	0	4686	0	170	14688	22963
7/87	538	1567	2	6	33	0	307	0	0	6105	0	210	15017	23785
	25.8%	39.2%	4550.0%	66.7%	330.3%	0.0%	2.6%	0.0%	0.0%	-23.2%	0.0%	-19.0%	-2.2%	-3.5%
8/88	710	1388	93	9	123	0	325	0	0	4674	0	165	15121	22608
8/87	25	2348	69	2	18	0	292	0	0	4897	0	184	14610	22445
	2740.0%	-40.9%	34.8%	350.0%	583.3%	0.0%	11.3%	0.0%	0.0%	-4.6%	0.0%	-10.3%	3.5%	0.7%
SUMMER TOTAL	28261	32662	642	132	1946	6707	1419	0	0	33918	0	6646	106408	218821
	24921	26152	274	85	4466	2391	1451	107	0	36513	0	4721	96132	197213
	13.4%	24.9%	134.3%	55.3%	-56.4%	180.5%	-2.2%	-100.0%	0.0%	-7.1%	0.0%	40.8%	10.8%	11.0%
WINTER TOTAL	128157	32073	456	279	4366	10207	1340	0	0	24462	0	58893	130597	390830
	156652	32155	22	336	23623	8723	1169	18	0	23893	0	54722	72710	374023
	-18.2%	-0.3%	1972.7%	-17.0%	-81.5%	17.0%	14.6%	-100.0%	0.0%	2.4%	0.0%	7.6%	79.6%	4.5%
YEAR TOTAL	156418	64735	1098	411	6312	16914	2759	0	0	58380	0	65539	237085	609651
	181573	58307	296	421	28089	11114	2620	125	0	60406	0	59443	168842	571236
	-13.9%	11.0%	270.9%	-2.4%	-77.5%	52.2%	5.3%	-100.0%	0.0%	-3.4%	0.0%	10.3%	40.4%	6.7%

NOTE: (1) WINTER TOTAL IS A SUM OF THE VALUES IN NOVEMBER, DECEMBER, JANUARY, FEBRUARY, AND MARCH.

(2) 999.9% REPRESENTS AN INFINITE PERCENTAGE CHANGE RESULTING FROM AN INCREASE FROM A ZERO VALUE TO SOME NON-ZERO VALUE AND THUS A DIVISION BY ZERO.

Table 15-A. The Growth of Non-tariff Industrial Sales in Ohio (1978-1986)
(MMCF)

Year	Industrial Tariff Sales	Industrial Non-tariff Sales	Total Industrial Sales	Share of Non-tariff Sales in Total Industrial Requirements
1978	296,600	28,276	324,876	8.70%
1979	294,506	29,533	324,039	9.11%
1980	288,213	30,725	318,938	9.63%
1981	278,490	36,919	315,409	11.71%
1982	234,897	32,735	267,632	12.23%
1983	210,835	47,590	258,425	18.42%
1984	175,375	85,380	260,755	32.74%
1985	120,950	133,990	254,940	52.56%
1986	84,390	170,410	254,800	66.88%

Source: PUCO FORM SG-1 and PUCO, Division of Forecasting and Siting.
Energy Information Administration's Natural Gas Annuals, 1979-1985.
Energy Information Administration's State Energy Data Report:
Consumption Estimates 1960-1985.

Table 15-B. Independent Forecast of Annual Natural Gas End Use Requirements, Calendar Year 1988 (MMCF)

	Actual 1986	Lower 95% Confidence Limit	Forecast 1988	Upper 95% Confidence Limit
Residential	323,000	296,923	312,550	328,178
Commercial	138,000	113,668	119,650	125,633
Industrial Tariff Sales	84,390	34,390	36,200	38,010
Industrial Non-tariff Sales[1]	170,410	216,600	228,000	239,400
Other[2]	14,347	13,300	14,000	14,700
Total Requirements	730,147	674,880	710,400	745,920

Source: PUCO, Division of Forecasting and Siting and FERC Form No. 2.

1 Non-tariff sales includes ANR sales to Sohio Chemical and Sohio Oil Companies.

2 Other includes pipeline gas, sales to electric utilities, and lease and plant fuels.

Note: Storage is not included in the total. Also note that non-tariff sales include natural gas procured under self-help programs such as SMP and FOD.

Table 16. Independent Forecasts of Gas Supply and Demand for the Eight Major Ohio Gas Utilities November 1987 - March 1988 (MMCF)

	Normal Weather			10% Colder Than Normal Weather		
	Supply	Demand	Surplus (Deficiency) [1]	Supply	Demand	Surplus (Deficiency) [1]
Cincinnati Gas & Electric	48,100	43,550	4,550	51,445	46,544	4,901
Columbia Gas	135,898	122,800	13,098	146,388	132,189	14,199
Dayton Power & Light	31,970	32,200	(230)	34,971	35,183	(212)
East Ohio Gas	151,234	146,200	5,034	162,403	156,991	5,412
National Gas	2,065	2,065	0	2,227	2,227	0
Ohio Gas	5,409	5,409	0	5,808	5,808	0
River Gas	1,981	1,981	0	2,073	2,073	0
West Ohio Gas	7,165	7,165	0	7,728	7,728	0
Total	383,822	361,370	22,452	413,043	388,743	24,300

[1] Numbers within parentheses indicate deficiency.

Source: October 1987 PUCO Form SG-2 of reporting utilities and PUCO, Division of Forecasting & Siting.

Table 17. Independent Forecasts of Gas Supply
and Demand for Cincinnati Gas and Electric Company
November 1987 - March 1988
(MMCF)

	Normal Weather				10% Colder Than Normal Weather			
	Supply	HDD[1]	Demand	Surplus (Deficiency)[2]	Supply	HDD[1]	Demand	Surplus (Deficiency)[2]
November 1987	6,711	648	6,700	11	7,002	713	6,991	11
December 1987	10,218	967	10,000	218	10,824	1,064	10,593	231
January 1988	12,186	1,119	11,700	486	13,253	1,231	12,724	529
February 1988	10,628	921	8,200	2,428	11,676	1,013	9,009	2,667
March 1988	8,357	719	6,950	1,407	8,690	791	7,227	1,463
Total[3]	48,100		43,550	4,550	51,445		46,544	4,901

1 HDD - Heating Degree-Days.

2 Numbers within parentheses indicate deficiency. Projected deficiency levels can be met with gas in storage.

3 Totals may not add due to independent rounding.

Source: Cincinnati Gas & Electric's October PUCO Form SG-2 and PUCO, Division of Forecasting & Siting.

Table 18. Independent Forecasts of Gas Supply
and Demand for Columbia Gas of Ohio
November 1987 - March 1988
(MMCF)

	Normal Weather				10% Colder Than Normal Weather			
	Supply	HDD [1]	Demand	Surplus (Deficiency)	Supply	HDD [1]	Demand	Surplus (Deficiency) [2]
November 1987	18,856	589	18,800	56	19,945	648	19,886	59
December 1987	27,519	930	27,000	519	29,425	1,023	28,870	555
January 1988	34,862	1,192	31,500	3,362	37,570	1,311	33,947	3,623
February 1988	30,244	1,146	26,000	4,244	32,925	1,261	28,305	4,620
March 1988	24,417	908	19,500	4,917	26,523	999	21,182	5,341
Total [3]	135,898		122,800	13,098	146,388		132,189	14,199

[1] HDD - Heating Degree-Days.

[2] Numbers within parentheses indicate deficiency. Projected deficiency levels can be met with gas in storage.

[3] Totals may not add due to independent rounding.

Source: Columbia Gas of Ohio's October PUCO Form SG-2 and PUCO, Division of Forecasting & Siting.

Table 19. Independent Forecasts of Gas Supply
and Demand for Dayton Power & Light Company
November 1987 - March 1988
(MMCF)

	Normal Weather				10% Colder Than Normal Weather			
	Supply	HDD [1]	Demand	Surplus (Deficiency)	Supply	HDD [1]	Demand	Surplus (Deficiency) [2]
November 1987	4,217	487	4,000	217	4,475	536	4,245	230
December 1987	6,041	843	7,000	(959)	6,528	927	7,564	(1,036)
January 1988	7,792	1,182	8,200	(408)	8,455	1,300	8,898	(443)
February 1988	8,178	1,148	7,800	378	8,881	1,263	8,471	410
March 1988	5,742	903	5,200	542	6,632	993	6,006	626
Total [3]	31,970		32,200	(230)	34,971		35,183	(212)

1
HDD - Heating Degree-Days.
2
Numbers within parentheses indicate deficiency. Projected deficiency levels can be met with gas in storage.
3
Totals may not add due to independent rounding.

Source: Dayton Power & Light Company's October PUCO Form SG-2 and PUCO, Division of Forecasting & Siting.

Table 20. Independent Forecasts of Gas Supply
and Demand for East Ohio Gas Company
November 1987 - March 1988
(MMCF)

	Normal Weather				10% Colder Than Normal Weather			
	Supply	HDD[1]	Demand	Surplus (Deficiency)	Supply	HDD[1]	Demand	Surplus (Deficiency)[2]
November 1987	24,792	568	25,000	(208)	26,373	625	26,594	(221)
December 1987	31,339	974	31,000	339	33,752	1,071	33,387	365
January 1988	36,450	1,208	36,300	150	39,253	1,329	39,091	162
February 1988	32,527	1,176	29,300	3,227	34,945	1,293	31,478	3,467
March 1988	26,126	957	24,600	1,526	28,080	1,053	26,440	1,640
Total[3]	151,234		146,200	5,034	162,403		156,991	5,412

1
HDD - Heating Degree-Days.
2
Numbers within parentheses indicate deficiency. Projected deficiency levels can be met with gas in storage.
3
Totals may not add due to independent rounding.

Source: East Ohio Gas Company's October PUCO Form SG-2 and PUCO, Division of Forecasting & Siting.

APPENDIX A

Table A-1: Allegheny Power System
Forecast of Net Energy for Load
(1000 MWH)

Month	Net Energy For Load (1986-1987)	Utility Forecast (1987-1988)	%Change (Utility Forecast vs. Actual	PUCO Forecast (1987-1988)	%Change (PUCO Forecast vs. Actual)
November	2,784	2,885	3.63	2,790	0.22
December	3,072	3,185	3.68	3,020	-1.69
January	3,246	3,475	7.05	3,250	0.12
February	2,903	3,122	7.54	2,930	0.93
March	2,965	3,210	8.26	3,010	1.52
April	2,749	2,844	3.46	2,730	-0.69
May	2,748	2,781	1.20	2,710	-1.38
June	2,827	2,761	-2.33	2,820	-0.25
July	3,068	2,904	-5.35	3,070	0.07
August	2,972	2,951	-0.71	2,870	-3.43
September	2,692	2,756	2.38	2,650	-1.56
October	*	2,851	*	2,840	*

* = Actual figures not available.
Source: Form EIA-119M and PUCO. Division of Forecasting and Siting.

Table A-2: American Electric Power
Forecast of Net Energy for Load
(1000 MWH)

Month	Net Energy For Load (1986-1987)	Utility Forecast (1987-1988)	%Change (Utility Forecast vs. Actual	PUCO Forecast (1987-1988)	%Change (PUCO Forecast vs. Actual)
November	7,102	7,242	1.97	7,150	0.68
December	7,981	8,450	5.88	8,100	1.49
January	8,414	9,151	8.76	8,400	-0.17
February	7,475	7,877	5.38	7,580	1.40
March	7,672	7,968	3.86	7,930	3.36
April	7,085	7,156	1.00	7,160	1.06
May	7,039	7,018	-0.30	7,090	0.72
June	7,543	7,187	-4.72	7,610	0.89
July	8,153	7,731	-5.18	7,980	-2.12
August	8,071	7,746	-4.03	8,070	-0.01
September	*	7,068	*	6,880	*
October	*	7,193	*	7,110	*

* = Actual figures not available.
Source: Form EIA-119M and PUCO. Division of Forecasting and Siting.

Table A-3: Cincinnati Gas and Electric
Forecast of Net Energy for Load
(1000 MWH)

Month	Net Energy For Load (1986-1987)	Utility Forecast (1987-1988)	%Change (Utility Forecast vs. Actual	PUCO Forecast (1987-1988)	%Change (PUCO Forecast vs. Actual)
November	1.367	1.358	-0.66	1.360	-0.51
December	1.543	1.524	-1.23	1.560	1.10
January	1.625	1.619	-0.37	1.650	1.54
February	1.395	1.428	2.37	1.420	1.79
March	1.445	1.456	0.76	1.480	2.42
April	1.335	1.275	-4.49	1.340	0.37
May	1.499	1.337	-10.81	1.360	-9.27
June	1.664	1.446	-13.10	1.500	-9.86
July	1.820	1.628	-10.55	1.870	2.75
August	1.786	1.630	-8.73	1.760	-1.46
September	1.443	1.384	-4.09	1.420	-1.59
October	*	1.320	*	1.410	*

* = Actual figures not available.
Source: Form EIA-119M and PUCO. Division of Forecasting and Siting.

Table A-4: Cleveland Electric Illuminating Company
Forecast of Net Energy for Load
(1000 MWH)

Month	Net Energy For Load (1986-1987)	Utility Forecast (1987-1988)	%Change (Utility Forecast vs. Actual	PUCO Forecast (1987-1988)	%Change (PUCO Forecast vs. Actual)
November	1.583	1.535	-3.03	1.580	-0.19
December	1.687	1.584	-6.11	1.760	4.33
January	1.753	1.726	-1.54	1.800	2.68
February	1.583	1.728	9.16	1.670	5.50
March	1.670	1.649	-1.26	1.730	3.59
April	1.554	1.570	1.03	1.610	3.60
May	1.635	1.571	-3.91	1.630	-0.31
June	1.716	1.656	-3.50	1.660	-3.26
July	1.910	1.685	-11.78	1.900	-0.52
August	1.781	1.697	-4.72	1.800	1.07
September	1.587	1.604	1.07	1.630	2.71
October	*	1.567	*	1.690	*

* = Actual figures not available.
Source: Form EIA-119M and PUCO. Division of Forecasting and Siting.

Table A-5: Dayton Power and Light
Forecast of Net Energy for Load
(1000 MWH)

Month	Net Energy For Load (1986-1987)	Utility Forecast (1987-1988)	%Change (Utility Forecast vs. Actual	PUCO Forecast (1987-1988)	%Change (PUCO Forecast vs. Actual)
November	968	944	-2.48	990	2.27
December	1,061	1,027	-3.20	1,120	5.56
January	1,146	1,202	4.89	1,130	-1.40
February	988	1,031	4.35	1,050	6.28
March	1,013	1,033	1.97	1,050	3.65
April	921	898	-2.50	910	-1.19
May	975	890	-8.72	960	-1.54
June	1,060	947	-10.66	1,010	-4.72
July	1,159	1,028	-11.30	1,130	-2.50
August	1,129	1,033	-8.50	1,100	-2.57
September	*	905	*	950	*
October	*	938	*	980	*

* = Actual figures not available.
Source: Form EIA-119M and PUCO. Division of Forecasting and Siting.

Table A-6: Ohio Edison Company
Forecast of Net Energy for Load
(1000 MWH)

Month	Net Energy For Load (1986-1987)	Utility Forecast (1987-1988)	%Change (Utility Forecast vs. Actual	PUCO Forecast (1987-1988)	%Change (PUCO Forecast vs. Actual)
November	2.006	2.204	9.87	2.000	-0.30
December	2.146	2.345	9.27	2.140	-0.28
January	2.243	2.519	12.30	2.250	0.31
February	2.035	2.242	10.17	2.070	1.72
March	2.148	2.362	9.96	2.190	1.96
April	2.005	2.159	7.68	1.970	-1.75
May	2.065	2.192	6.15	1.970	-4.60
June	2.170	2.219	2.26	2.130	-1.84
July	2.407	2.332	-3.12	2.280	-5.28
August	2.345	2.352	0.30	2.320	-1.07
September	2.119	2.199	3.78	2.060	-2.78
October	*	2.287	*	2.130	*

* = Actual figures not available.
Source: Form EIA-119M and PUCO. Division of Forecasting and Siting.

Table A-7: Ohio Valley Electric Corporation
Forecast of Net Energy for Load
(1000 MWH)

Month	Net Energy** For Load (1986-1987)	Utility Forecast (1987-1988)	%Change (Utility Forecast vs. Actual)
November	1.390	1.471	5.83
December	1.575	1.534	-2.60
January	1.411	1.471	4.25
February	1.375	1.412	2.69
March	1.513	1.477	-2.38
April	1.385	1.424	2.82
May	1.374	1.473	7.21
June	1.428	1.440	0.84
July	1.567	1.540	-1.72
August	1.614	1.518	-5.95
September	*	1.396	*
October	*	1.520	*

* = Actual figures not available.
** = Net Energy For Load is defined as the Total Expected Generation.
Source: Form EIA-119M and PUCO. Division of Forecasting and Siting.

Table A-8: Toledo Edison Company
Forecast of Net Energy for Load
(1000 MWH)

Month	Net Energy For Load (1986-1987)	Utility Forecast (1987-1988)	%Change (Utility Forecast vs. Actual	PUCO Forecast (1987-1988)	%Change (PUCO Forecast vs. Actual)
November	657	662	0.76	670	1.98
December	700	704	0.57	680	-2.86
January	725	766	5.66	720	-0.69
February	666	707	6.16	650	-2.40
March	706	727	2.97	620	-12.18
April	643	653	1.56	625	-2.80
May	684	659	-3.65	660	-3.51
June	718	676	-5.85	670	-6.69
July	781	713	-8.71	760	-2.69
August	752	748	-0.53	670	-10.90
September	*	665	*	670	*
October	*	659	*	710	*

* = Actual figures not available.
Source: Form EIA-119M and PUCO, Division of Forecasting and Siting.

Table A-9: Independent Forecast of Ohio Electricity Demand
Residential Sector
(1000 MWH)

Month	Lower 95% Confidence Limit	PUCO Forecast (1987-88)	Upper 95% Confidence Limit	Actual (1986-1987)	Forecast Percentage Change
November	2.120	2.210	2.300	2.283	-3.2
December	2.780	2.940	3.100	2.923	0.6
January	3.160	3.440	3.720	3.323	3.5
February	2.990	3.110	3.230	3.036	2.4
March	2.700	2.850	3.000	2.742	3.9
April	2.310	2.410	2.510	2.443	-1.4
May	2.000	2.090	2.180	2.158	-3.2
June	2.210	2.370	2.530	2.514	-5.7
July	2.510	2.790	3.070	2.946	-5.3
August	2.590	2.920	3.250	3.117	-6.3
September	2.060	2.290	2.520	*	*
October	2.180	2.270	2.360	*	*

* = Actual figures not available.
Source: Ohio Electric Utility Institute and PUCO. Division of Forecasting and Siting (Sectoral totals include the eight major investor-owned electric utility companies. excluding OVEC).

FIG. A–1. MONTHLY OHIO RESIDENTIAL ELECTRICITY CONSUMPTION

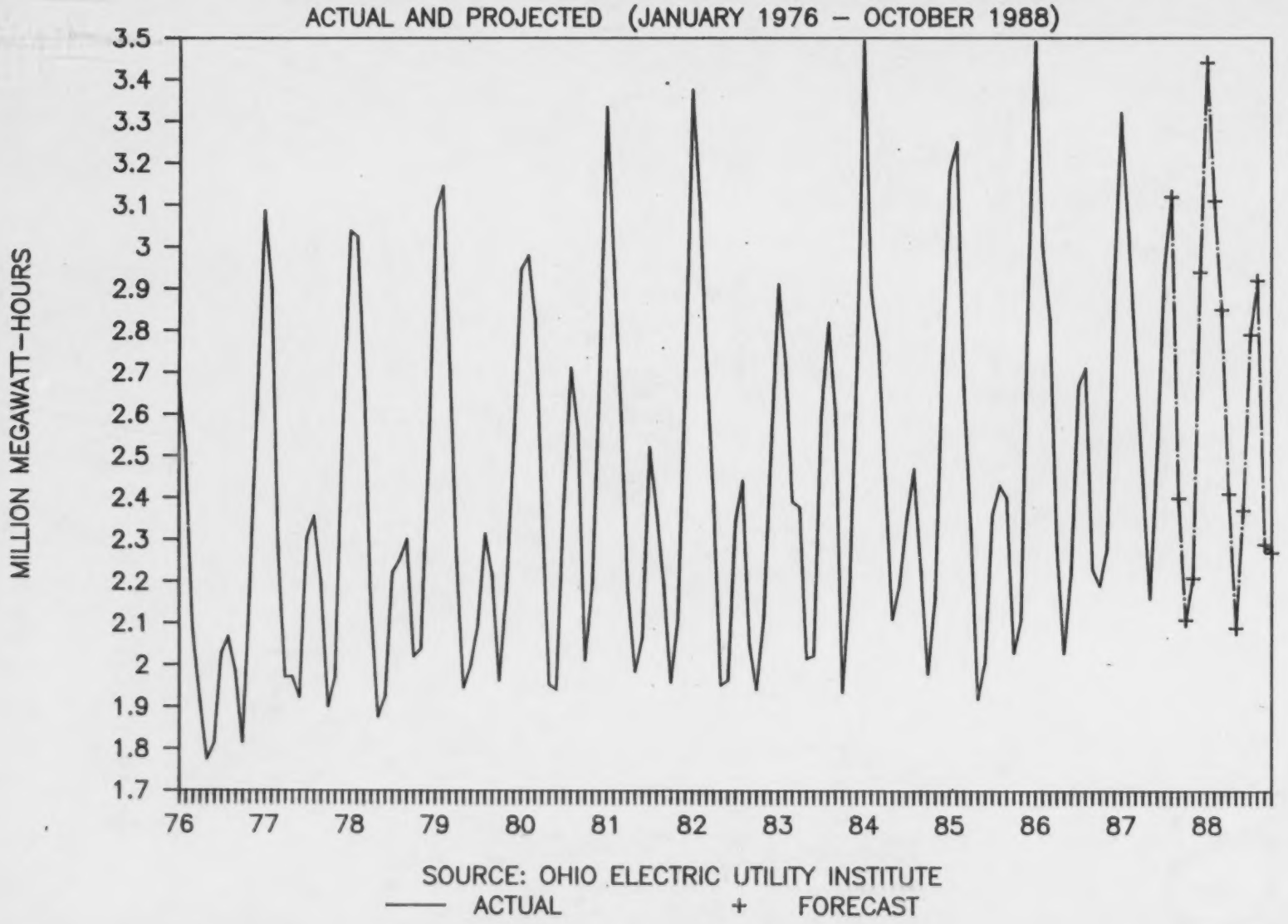


Table A-10: Independent Forecast of Ohio Electricity Demand
Commercial Sector
(1000 MWH)

Month	Lower 95% Confidence Limit	PUCO Forecast (1987-88)	Upper 95% Confidence Limit	Actual (1986-1987)	Forecast Percentage Change
November	1.800	1.880	1.960	1.884	-0.2
December	1.960	2.070	2.180	2.066	0.2
January	2.110	2.270	2.430	2.119	7.1
February	2.080	2.180	2.280	2.082	4.7
March	2.000	2.090	2.180	2.004	4.3
April	1.900	1.990	2.080	1.934	2.9
May	2.000	2.100	2.200	2.014	4.3
June	2.030	2.150	2.270	2.318	-7.2
July	2.170	2.300	2.430	2.490	-7.6
August	2.260	2.380	2.500	2.457	-3.1
September	1.970	2.100	2.230	*	*
October	1.870	1.950	2.030	*	*

* = Actual figures not available.
Source: Ohio Electric Utility Institute and PUCO. Division of Forecasting and Siting (Sectoral totals include the eight major investor-owned electric utility companies, excluding OVEC).

FIG. A–2. MONTHLY OHIO COMMERCIAL ELECTRICITY CONSUMPTION

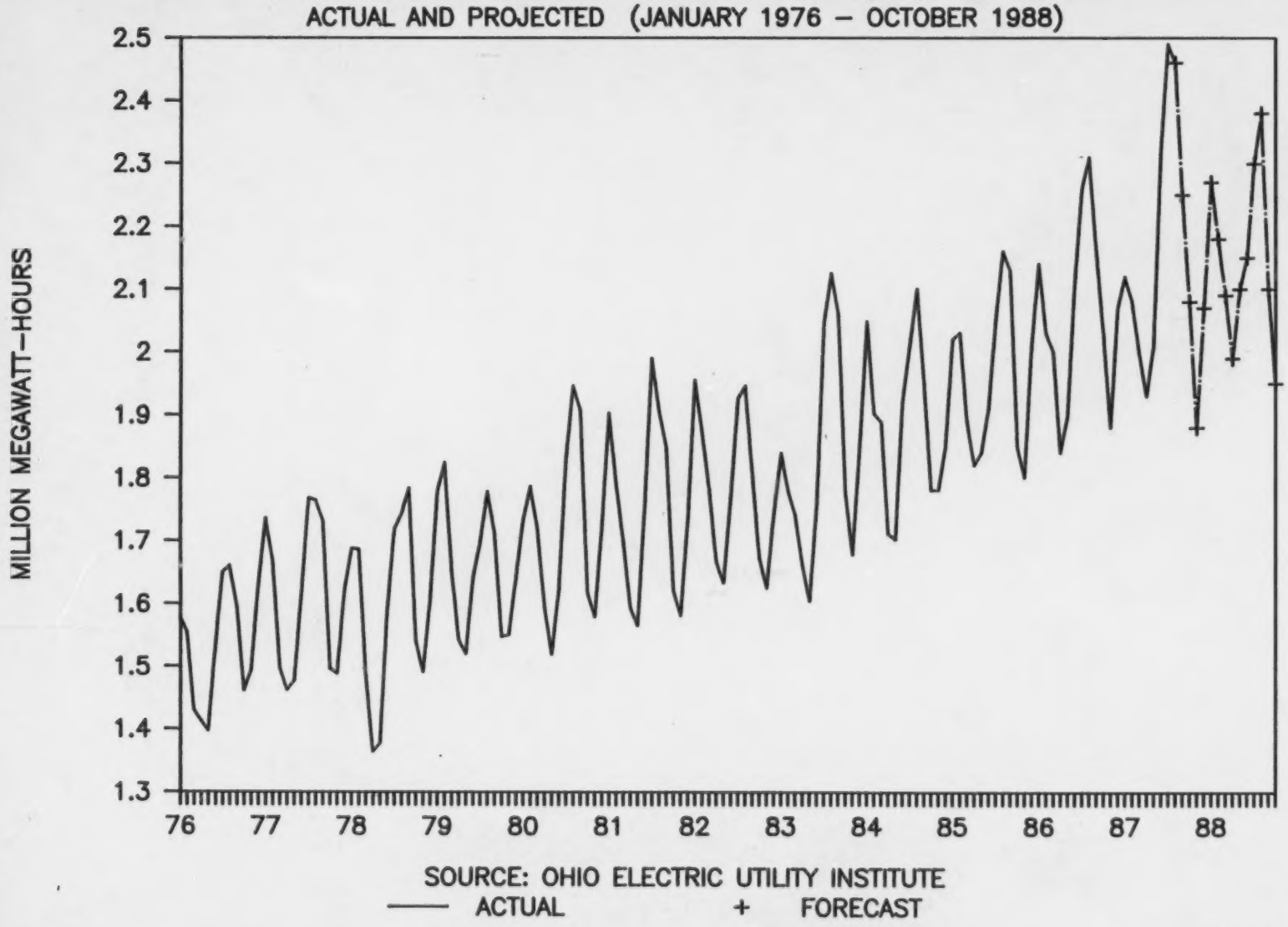


Table A-11: Independent Forecast of Ohio Electricity Demand
Industrial Sector
(1000 MWH)

Month	Lover 95% Confidence Limit	PUCO Forecast (1987-88)	Upper 95% Confidence Limit	Actual (1986-1987)	Forecast Percentage Change
November	3,510	3,780	4,050	3,569	5.9
December	3,420	3,680	3,940	3,600	2.2
January	3,480	3,750	4,020	3,673	2.1
February	3,640	3,920	4,200	3,864	1.4
March	3,760	4,050	4,340	3,984	1.7
April	3,670	3,950	4,230	3,930	0.5
May	3,770	4,060	4,350	3,945	2.9
June	3,850	4,150	4,450	4,044	2.6
July	3,760	4,050	4,340	3,956	2.4
August	3,640	3,920	4,200	4,055	-3.3
September	3,700	3,990	4,280	*	*
October	3,600	3,880	4,160	*	*

* = Actual figures not available.
Source: Ohio Electric Utility Institute and PUCO. Division of Forecasting and Siting (Sectoral totals include the eight major investor-owned electric utility companies, excluding OVEC).

FIG. A–3. MONTHLY OHIO INDUSTRIAL ELECTRICITY CONSUMPTION

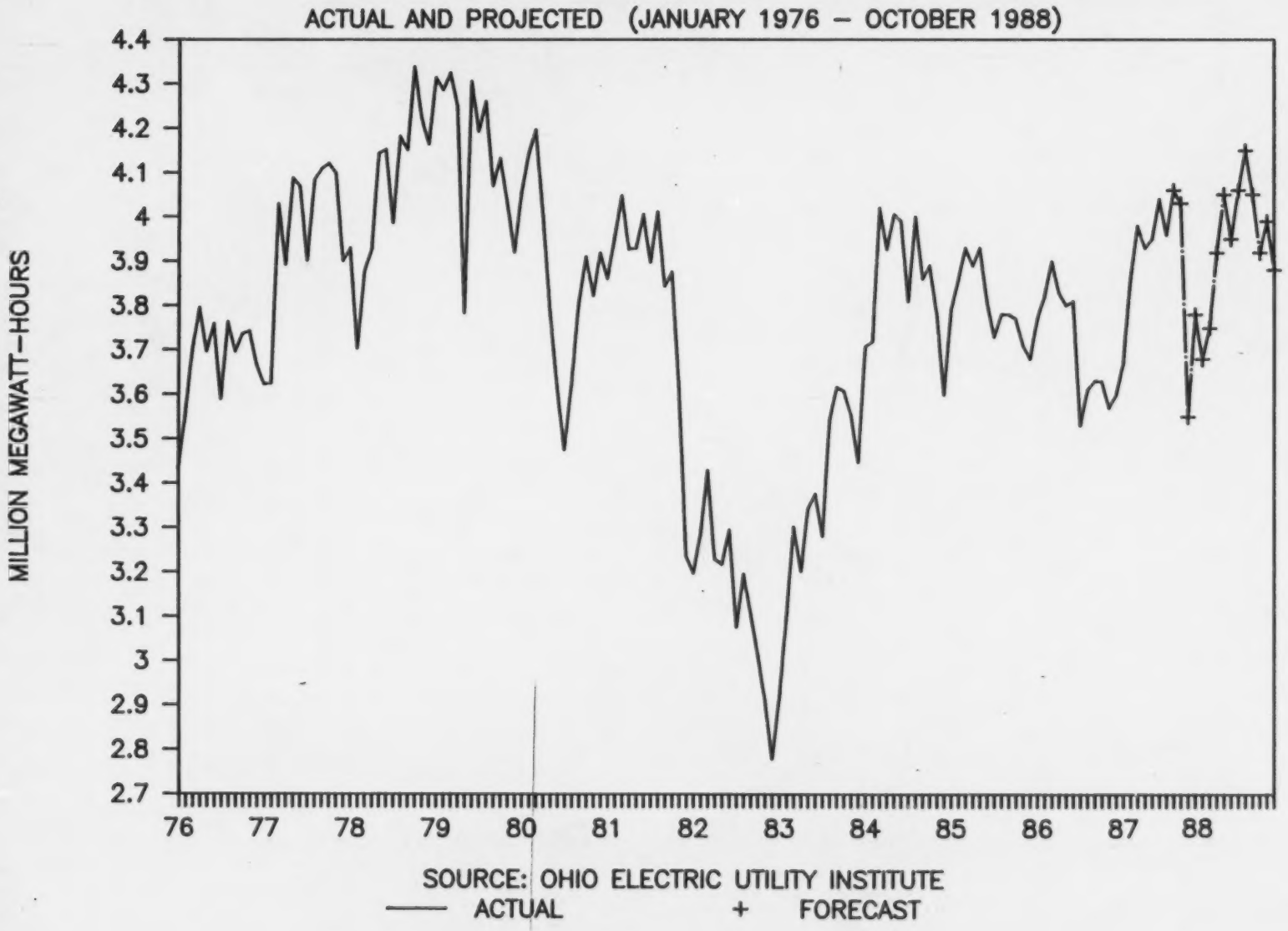


Table A-12: Independent Forecast of Ohio Electricity Demand
All Sectors
(1000 MWH)

Month	Lover 95% Confidence Limit	PUCO Forecast (1987-88)	Upper 95% Confidence Limit	Actual (1986-1987)	Forecast Percentage Change
November	7.550	8.300	9.050	8.157	1.8
December	8.310	9.130	9.950	9.032	1.1
January	9.320	9.830	10.340	9.570	2.7
February	8.690	9.660	10.630	9.440	2.3
March	8.580	9.350	10.120	9.179	1.9
April	8.160	8.760	9.360	8.737	0.3
May	7.680	8.460	9.240	8.555	-1.1
June	8.040	8.890	9.740	9.353	-5.0
July	8.600	9.450	10.300	9.902	-4.6
August	8.710	9.490	10.270	10.115	-6.2
September	7.970	8.590	9.210	*	*
October	7.570	8.320	9.070	*	*

* = Actual figures not available.
Source: Ohio Electric Utility Institute and PUCO. Division of Forecasting and Siting (Ohio totals include the eight major investor-owned electric utility companies, excluding OVEC).

FIG. A–4. MONTHLY OHIO TOTAL ELECTRICITY CONSUMPTION

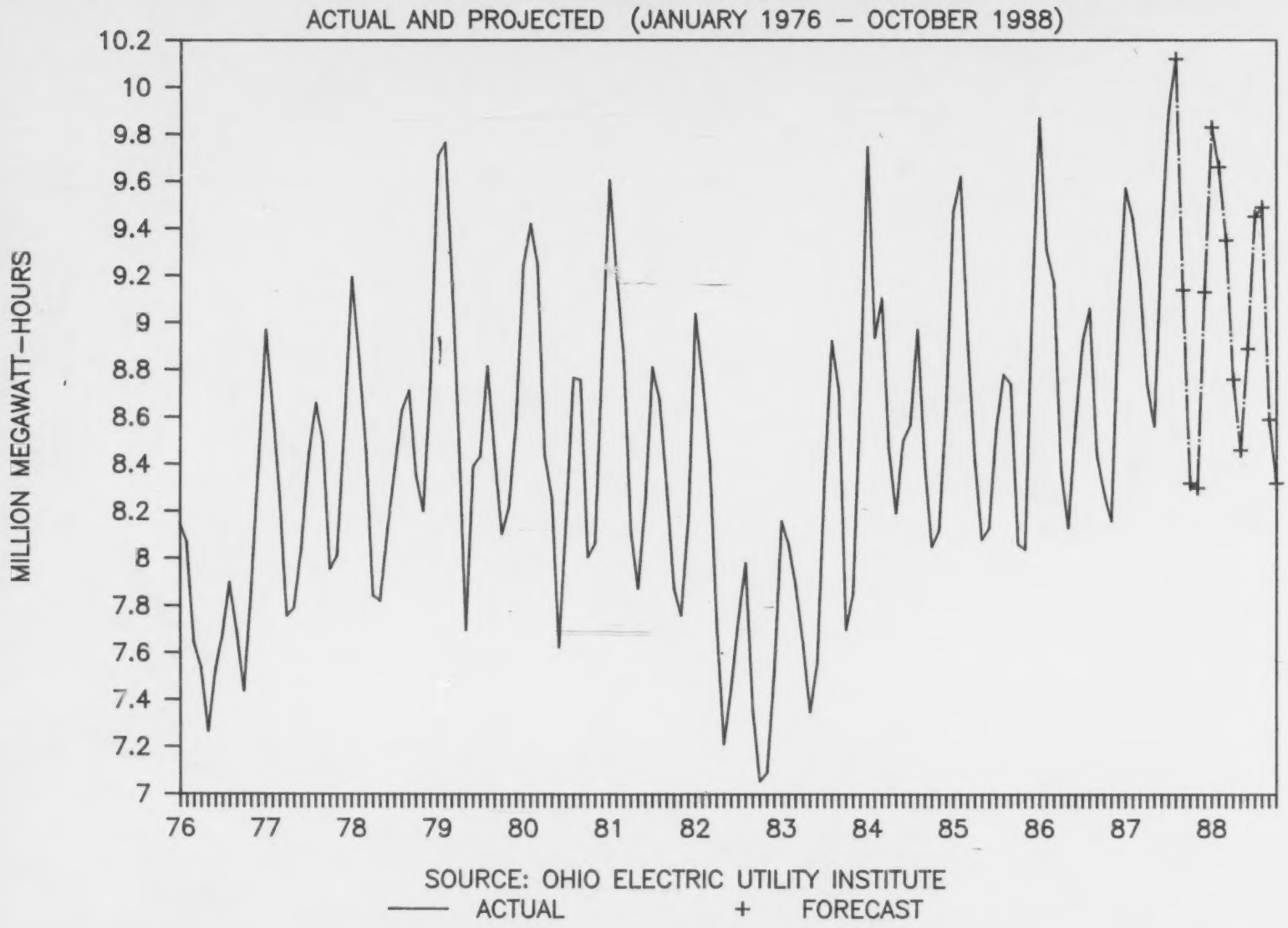
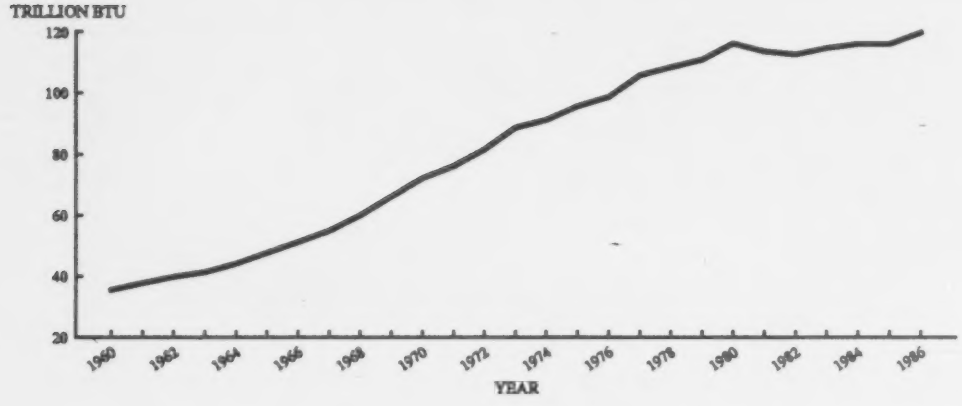
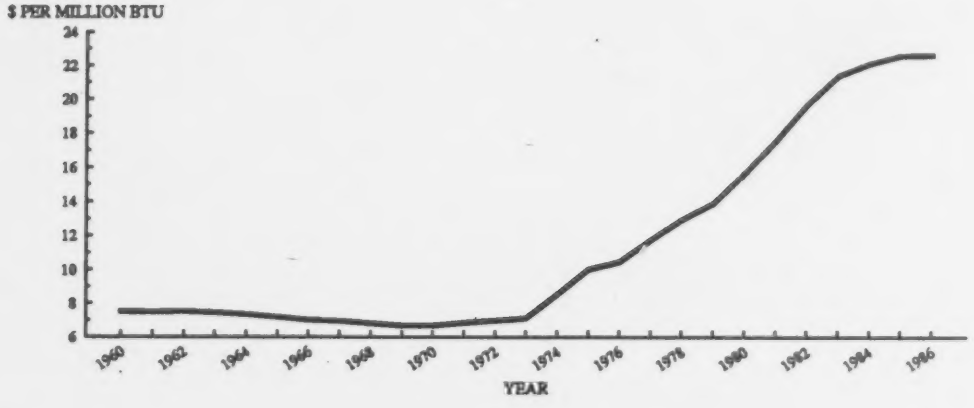


FIG. A-5. ANNUAL OHIO ELECTRIC CONSUMPTION AND PRICES: RESIDENTIAL SECTORS (1960 - 1986)

CONSUMPTION VS. YEAR



PRICE VS. YEAR



COEFFICIENT OF TRANSFORMATION VS. PRICE

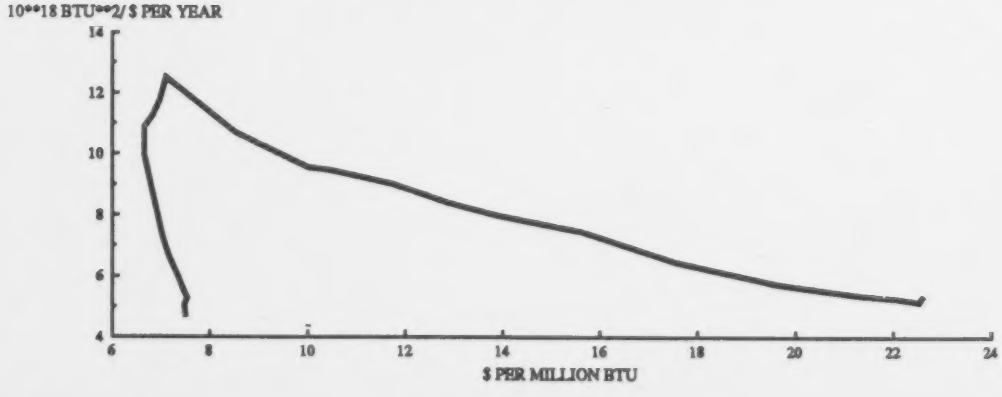
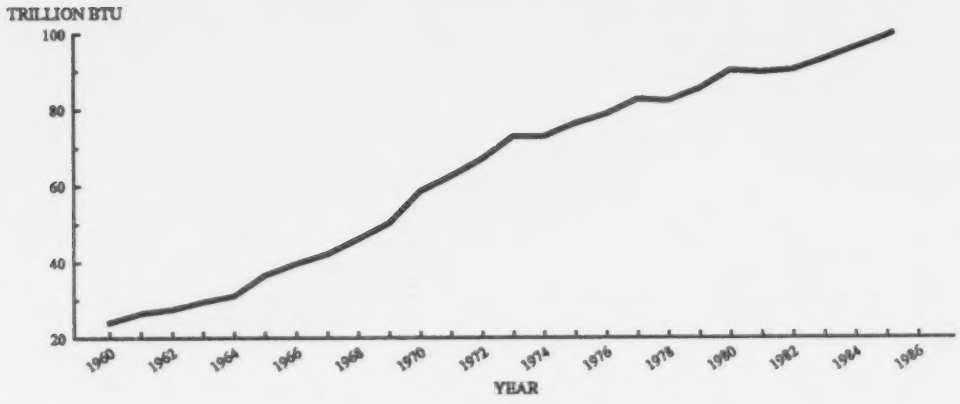
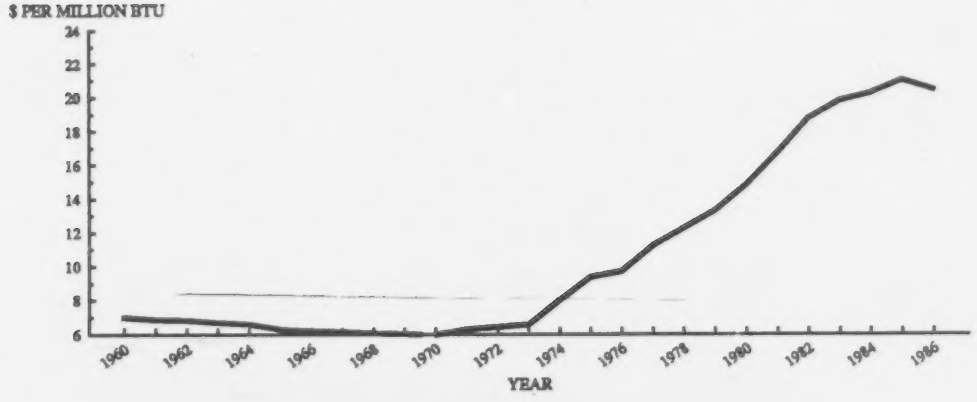


FIG. A-6. ANNUAL OHIO ELECTRIC CONSUMPTION AND PRICES: COMMERCIAL SECTOR (1960 - 1986)

CONSUMPTION VS. YEAR



PRICE VS. YEAR



COEFFICIENT OF TRANSFORMATION VS. PRICE

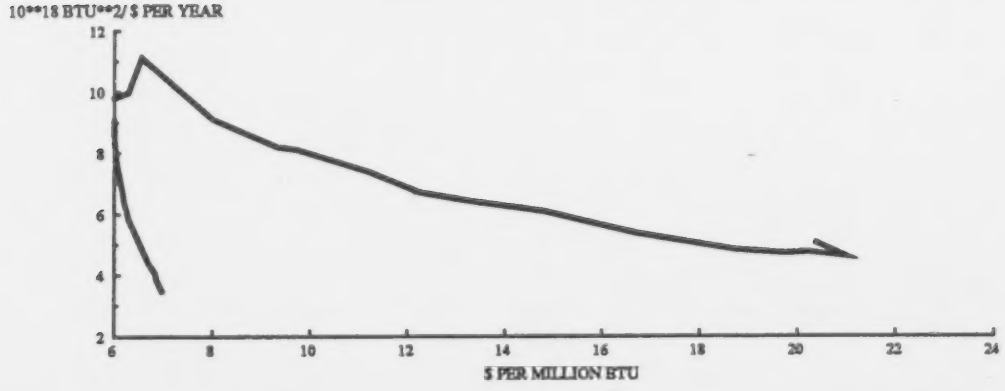
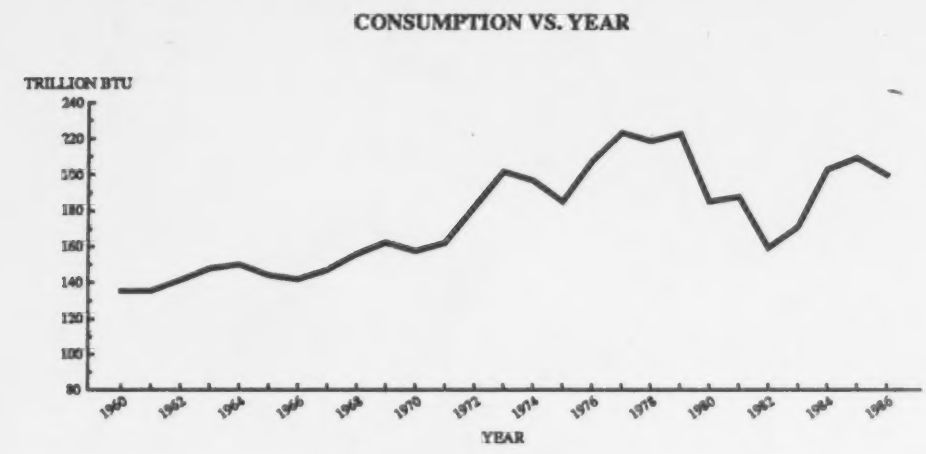
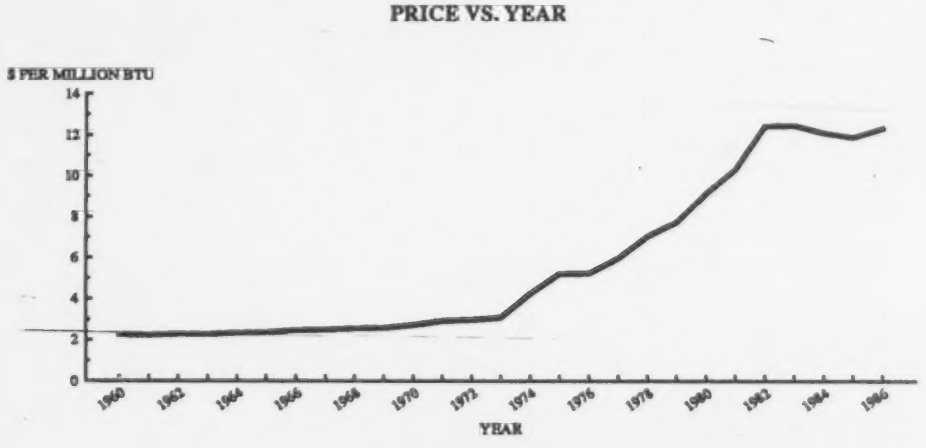


FIG. A-7. ANNUAL OHIO ELECTRIC CONSUMPTION AND PRICES: INDUSTRIAL SECTOR (1960-1986)





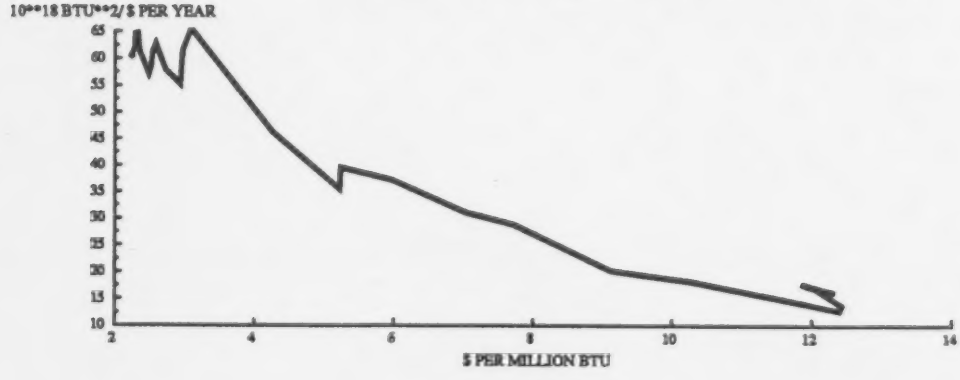
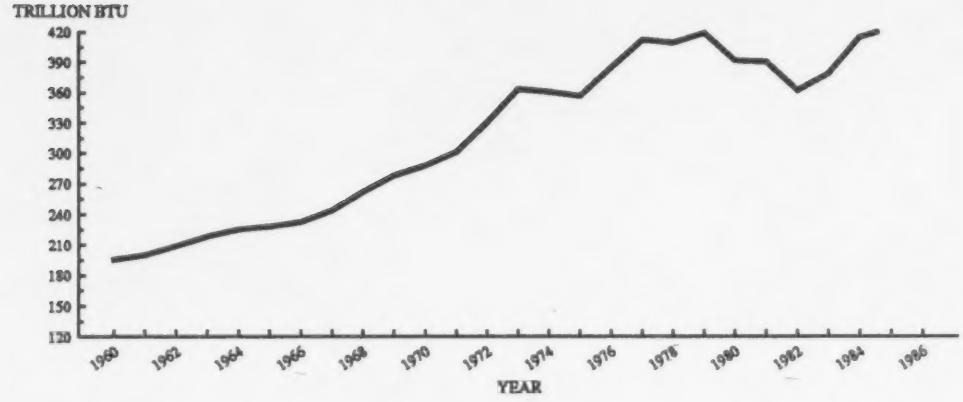
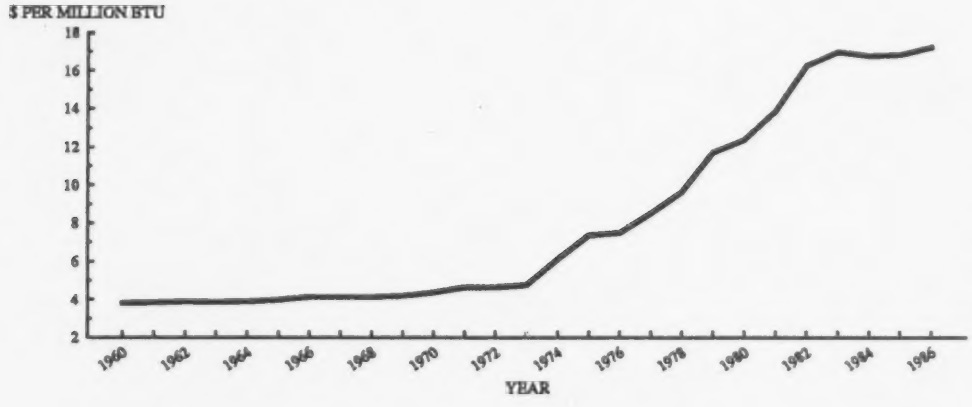


FIG. A-8. ANNUAL OHIO ELECTRIC CONSUMPTION AND PRICES: TOTAL OF ALL SECTORS (1960 - 1986)

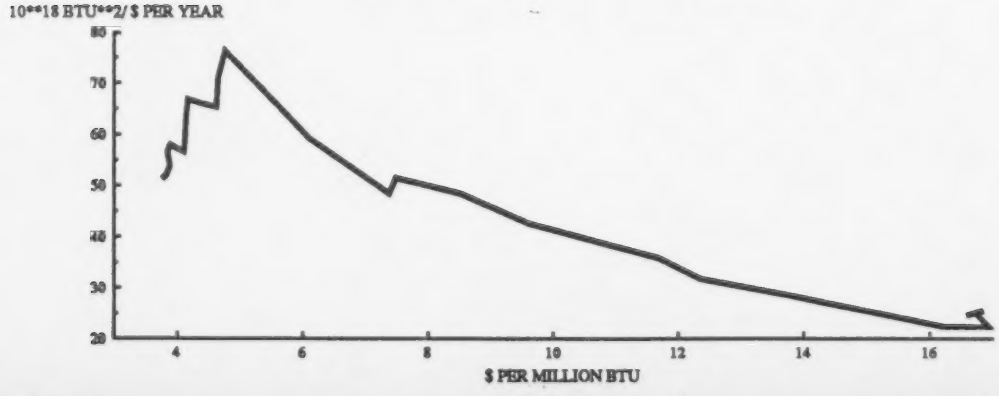
CONSUMPTION VS. YEAR



PRICE VS. YEAR



COEFFICIENT OF TRANSFORMATION VS. PRICE



APPENDIX B

Table B-1. Cincinnati Gas and Electric
Forecast of Natural Gas Requirements
(MMCF)

Month	Actual Demand (1986-1987)	Utility Forecast (1987-1988)	%Change (Utility Forecast vs. Actual)	PUCO Forecast (1987-1988)	%Change (PUCO Forecast vs. Actual)
November	7,120	6,711	-5.74	6,700	-5.90
December	10,229	10,218	-0.11	10,000	-2.24
January	11,752	12,186	3.69	11,700	-0.44
February	8,545	10,628	24.38	8,200	-4.04
March	7,192	8,357	16.20	6,950	-3.36
April	5,438	4,969	-8.62	5,200	-4.38
May	1,899	3,067	61.51	2,400	26.38
June	2,074	2,302	10.99	2,000	-3.57
July	2,009	2,207	9.86	1,900	-5.43
August	2,124	2,195	3.34	2,050	-3.48
September	2,126	2,381	11.99	1,950	-8.28
October	*	4,265	*	3,800	*

*
Actual figures were not available.

Source: PUCO Form SG-2 and PUCO, Division of Forecasting & Siting.

Table B-2. Columbia Gas of Ohio
Forecast of Natural Gas Requirements
(MMCF)

Month	Actual Demand (1986-1987)	Utility Forecast (1987-1988)	%Change (Utility Forecast vs. Actual)	PUCO Forecast (1987-1988)	%Change (PUCO Forecast vs. Actual)
November	21,037	18,856	-10.37	18,800	-10.63
December	27,958	27,519	-1.57	27,000	-3.43
January	31,713	34,862	9.93	31,500	-0.67
February	25,598	30,244	18.15	26,000	1.57
March	20,621	24,417	18.41	19,500	-5.44
April	13,241	15,268	15.31	12,600	-4.84
May	5,770	7,656	32.69	5,400	-6.41
June	4,250	4,290	0.94	3,750	-11.76
July	4,324	4,449	2.89	4,400	1.76
August	4,049	4,798	18.50	3,600	-11.09
September	5,714	4,857	-15.00	5,000	-12.50
October	*	9,651	*	9,250	*

*
Actual figures were not available.

Source: PUCO Form SG-2 and PUCO, Division of Forecasting & Siting.

Table 8-3. Dayton Power and Light
Forecast of Natural Gas Requirements
(MMCF)

Month	Actual Demand (1986-1987)	Utility Forecast (1987-1988)	%Change (Utility Forecast vs. Actual)	PUCO Forecast (1987-1988)	%Change (PUCO Forecast vs. Actual)
November	4,419	4,217	-4.57	4,000	-9.48
December	7,769	6,041	-22.24	7,000	-9.90
January	9,089	7,792	-14.27	8,200	-9.78
February	7,816	8,178	4.63	7,800	-0.20
March	5,199	5,742	10.44	5,200	0.02
April	3,329	4,508	35.42	3,300	-0.87
May	1,541	2,255	46.33	1,600	3.83
June	1,187	1,233	3.88	1,100	-7.33
July	1,250	1,174	-6.08	1,100	-12.00
August	1,212	1,175	-3.05	1,050	-13.37
September	1,335	1,201	-10.04	1,250	-6.37
October	*	2,378	*	2,400	*

*
Actual figures were not available.

Source: PUCO Form SG-2 and PUCO, Division of Forecasting & Siting.

Table B-4. East Ohio Gas
Forecast of Natural Gas Requirements
(MMCF)

Month	Actual Demand (1986-1987)	Utility Forecast (1987-1988)	%Change (Utility Forecast vs. Actual)	PUCO Forecast (1987-1988)	%Change (PUCO Forecast vs. Actual)
November	26,612	24,792	-6.84	25,000	-6.06
December	33,156	31,339	-5.48	31,000	-6.50
January	36,571	36,450	-0.33	36,300	-0.74
February	30,057	32,527	8.22	29,300	-2.52
March	25,375	26,126	2.96	24,600	-3.05
April	16,652	20,071	20.53	18,000	8.10
May	14,310	19,472	36.07	15,000	4.82
June	14,988	15,131	0.95	14,400	-3.92
July	15,335	14,107	-8.01	13,800	-10.01
August	14,083	13,353	-5.18	13,400	-4.85
September	13,910	15,433	10.95	13,600	-2.23
October	*	21,474	*	19,200	*

*
Actual figures were not available.

Source: PUCO Form SG-2 and PUCO, Division of Forecasting & Siting.

Table B-5. Independent Forecast of Ohio Natural Gas End User Requirements: Residential Sector (MMCF)

Month	Lower 95% Confidence Limit	PUCO Forecast (1987-88)	Upper 95% Confidence Limit	Actual (1986-87)	Forecast Percentage Change
November	19,840	24,800	29,760	26,202	-5.4
December	34,575	46,100	57,625	46,437	-0.7
January	43,125	57,500	71,875	53,194	8.1
February	39,450	52,600	65,750	54,298	-3.1
March	34,400	43,000	51,600	43,375	-0.9
April	25,040	31,300	37,560	31,436	-0.4
May	13,120	16,400	19,680	15,836	3.6
June	6,588	7,750	8,913	8,488	-8.7
July	5,865	6,900	7,935	7,006	-1.5
August	5,525	6,500	7,475	6,540	-0.6
September	5,880	7,350	8,820	7,319	0.4
October	9,880	12,350	14,820	*	*

* Actual figures were not available.

Source: PUCO Form SG-1 and PUCO, Division of Forecasting and Siting.

FIG. B-1. MONTHLY OHIO RESIDENTIAL NATURAL GAS CONSUMPTION

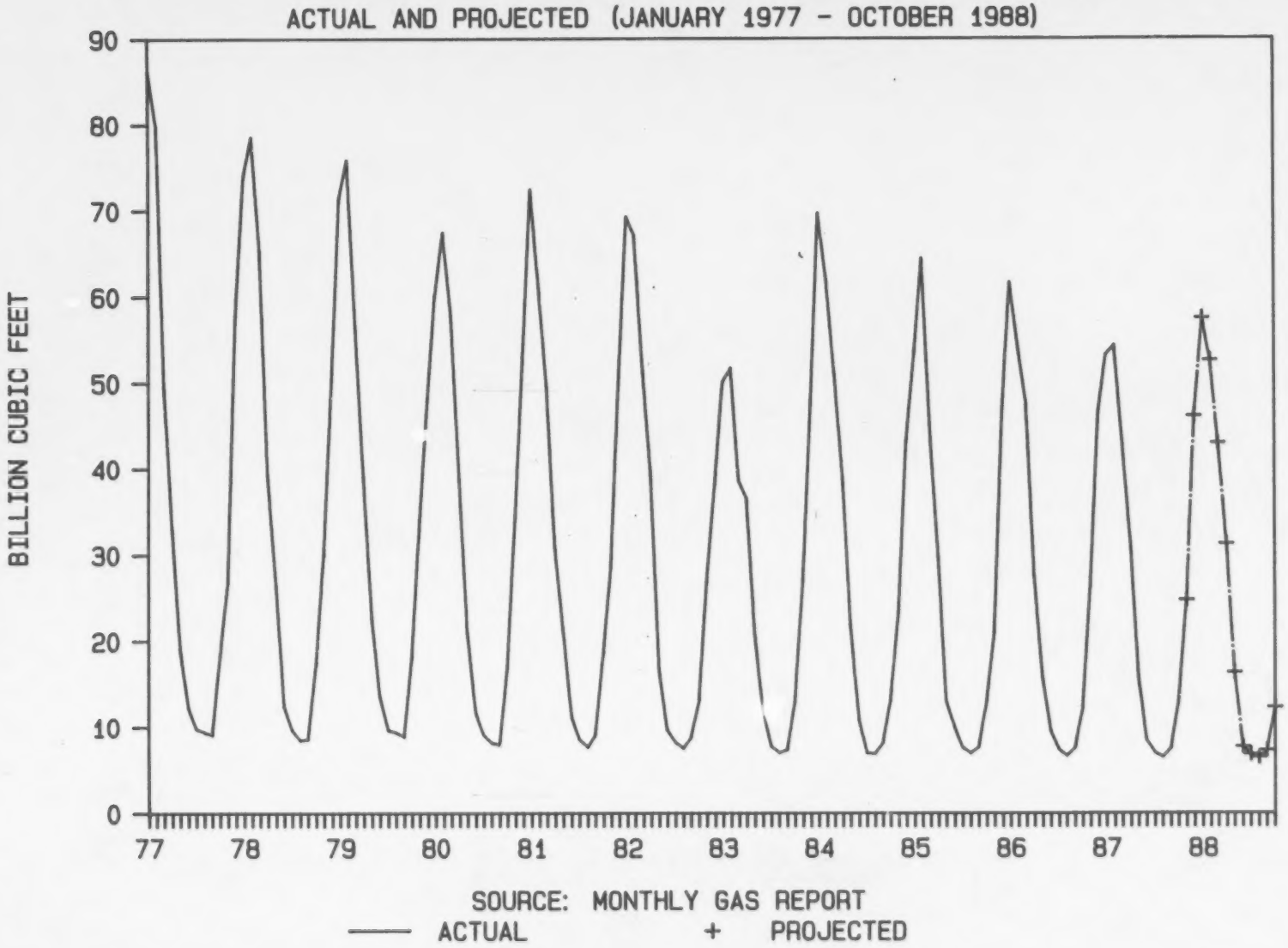


Table B-6. Independent Forecast of Ohio Natural Gas End User Requirements: Commercial Sector (MMCF)

Month	Lower 95% Confidence Limit	PUCO Forecast (1987-88)	Upper 95% Confidence Limit	Actual (1986-87)	Forecast Percentage Change
November	8,080	10,100	12,120	10,598	-4.7
December	13,950	18,600	23,250	19,231	-3.3
January	15,750	21,000	26,250	21,604	-2.8
February	15,525	20,700	25,875	21,786	-5.0
March	13,280	16,600	19,920	17,035	-2.6
April	9,080	11,350	13,620	12,070	-6.0
May	4,320	5,400	6,480	5,696	-5.2
June	2,465	2,900	3,335	3,221	-10.0
July	2,338	2,750	3,162	2,700	1.9
August	2,125	2,500	2,875	2,714	-7.9
September	2,280	2,850	3,420	3,017	-5.5
October	3,920	4,900	5,880	*	*

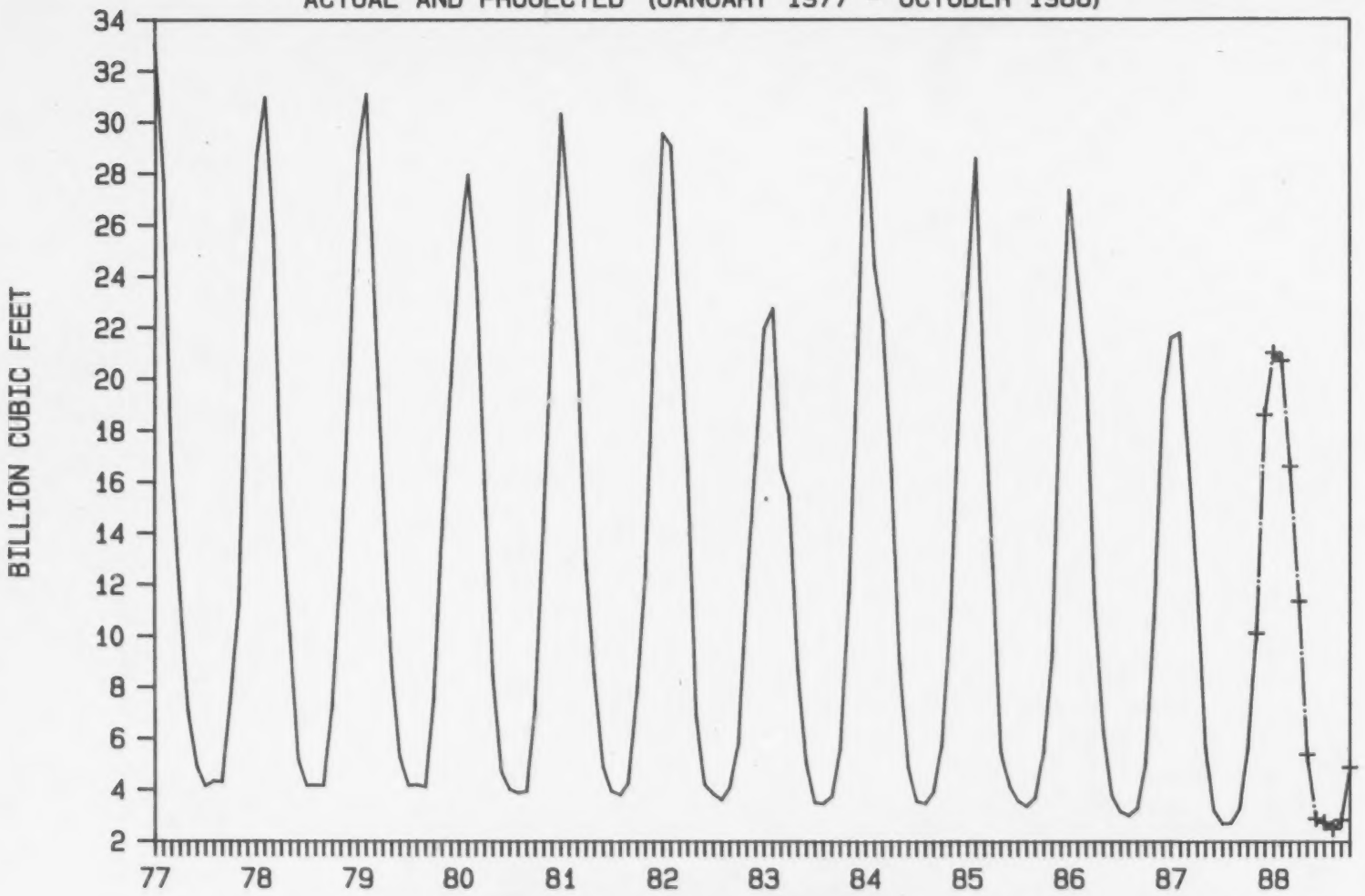
* Actual figures were not available.

Note: This independent forecast is for tariff sales only. Non-tariff sales, which are increasingly popular among commercial and industrial customers, are purchases the made directly from the wellhead (see also Table 15-B).

Source: PUCO Form SG-1 and PUCO, Division of Forecasting and Siting.

FIG. B-2. MONTHLY OHIO COMMERCIAL NATURAL GAS CONSUMPTION

ACTUAL AND PROJECTED (JANUARY 1977 - OCTOBER 1988)



SOURCE: MONTHLY GAS REPORT

—— ACTUAL + PROJECTED

Table B-7. Independent Forecast of Ohio Natural Gas End User Requirements: Industrial Sector (MMCF)

Month	Lower 95% Confidence Limit	PUCO Forecast (1987-88)	Upper 95% Confidence Limit	Actual (1986-87)	Forecast Percentage Change
November	2,663	3,550	4,438	5,056	-29.8
December	3,150	4,500	5,850	6,538	-31.2
January	3,080	4,400	5,720	6,264	-29.8
February	3,220	4,600	5,980	6,635	-30.7
March	2,925	3,900	4,875	5,515	-29.3
April	2,288	3,050	3,813	4,358	-30.0
May	1,650	2,200	2,750	3,083	-28.6
June	1,680	2,100	2,520	2,961	-29.1
July	1,440	1,800	2,160	2,529	-28.8
August	1,400	1,750	2,100	2,495	-29.9
September	1,463	1,950	2,438	2,720	-28.3
October	1,800	2,400	3,000	*	*

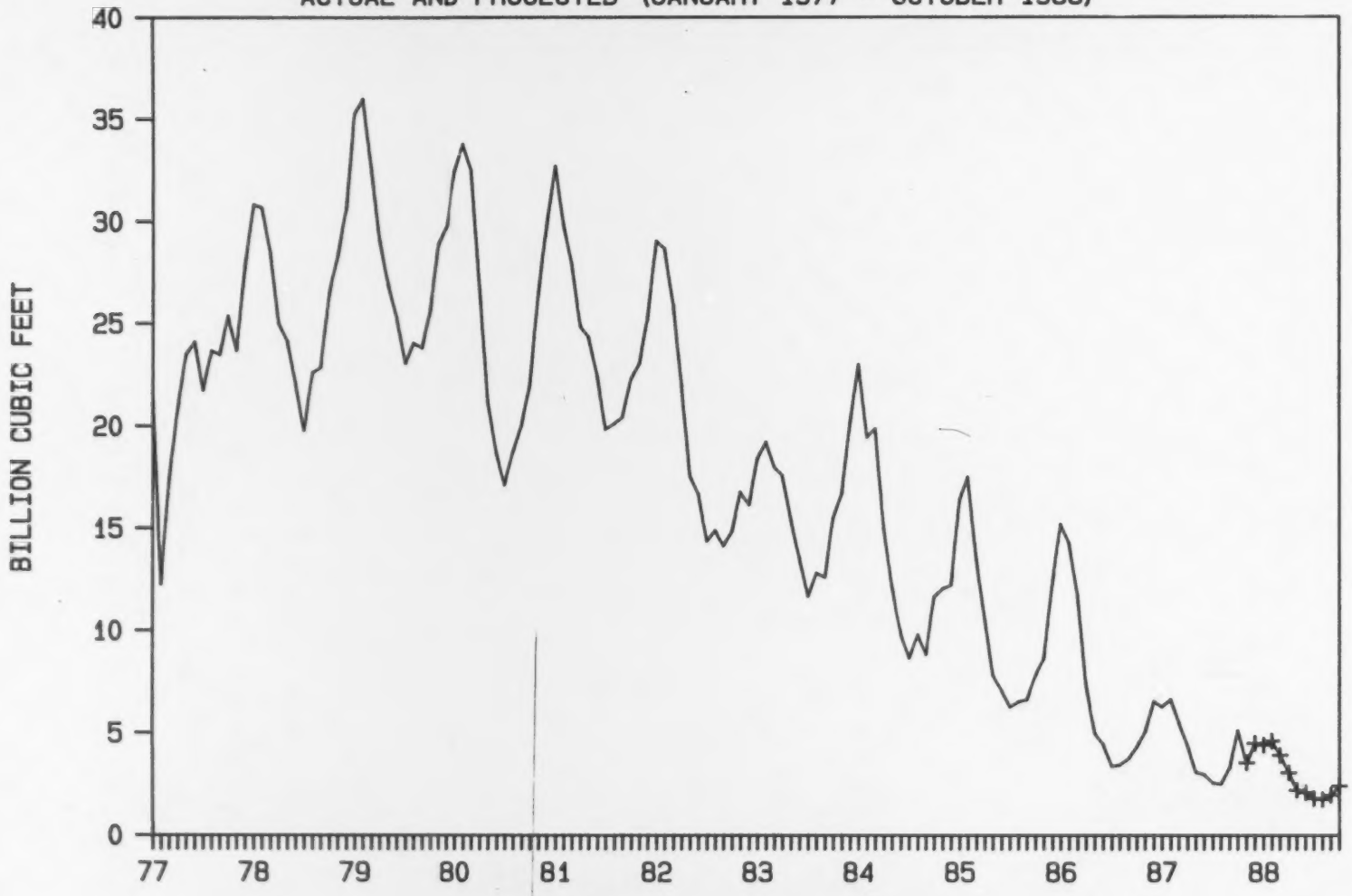
* Actual figures were not available.

Note: This independent forecast is for tariff sales only. Non-tariff sales, which are increasingly popular among commercial and industrial customers, are purchases the made directly from the wellhead (see also Table 15-B).

Source: PUCO Form SG-1 and PUCO, Division of Forecasting and Siting.

FIG. B-3. MONTHLY OHIO INDUSTRIAL NATURAL GAS CONSUMPTION

ACTUAL AND PROJECTED (JANUARY 1977 - OCTOBER 1988)



SOURCE: MONTHLY GAS REPORT

—— ACTUAL + PROJECTED

Table B-8. Independent Forecast of Ohio Natural Gas
End User Requirements: All Sectors
(MMCF)

Month	Lower 95% Confidence Limit	PUCO Forecast (1987-88)	Upper 95% Confidence Limit	Actual** (1986-87)	Forecast Percentage Change
November	47,200	59,000	70,800	61,847	-4.6
December	60,750	81,000	101,250	82,582	-1.9
January	70,950	94,600	118,250	93,118	1.6
February	58,425	77,900	97,375	75,332	3.4
March	48,800	61,000	73,200	61,144	-0.2
April	33,200	41,500	49,800	40,300	3.0
May	20,800	26,000	31,200	24,503	6.1
June	19,550	23,000	26,450	23,224	-1,0
July	19,125	22,500	25,875	23,785	-5.4
August	18,700	22,000	25,300	22,445	-2.0
September	18,800	23,500	28,200	24,201	-2.9
October	30,400	38,000	45,600	*	*

* Actual figures were not available.

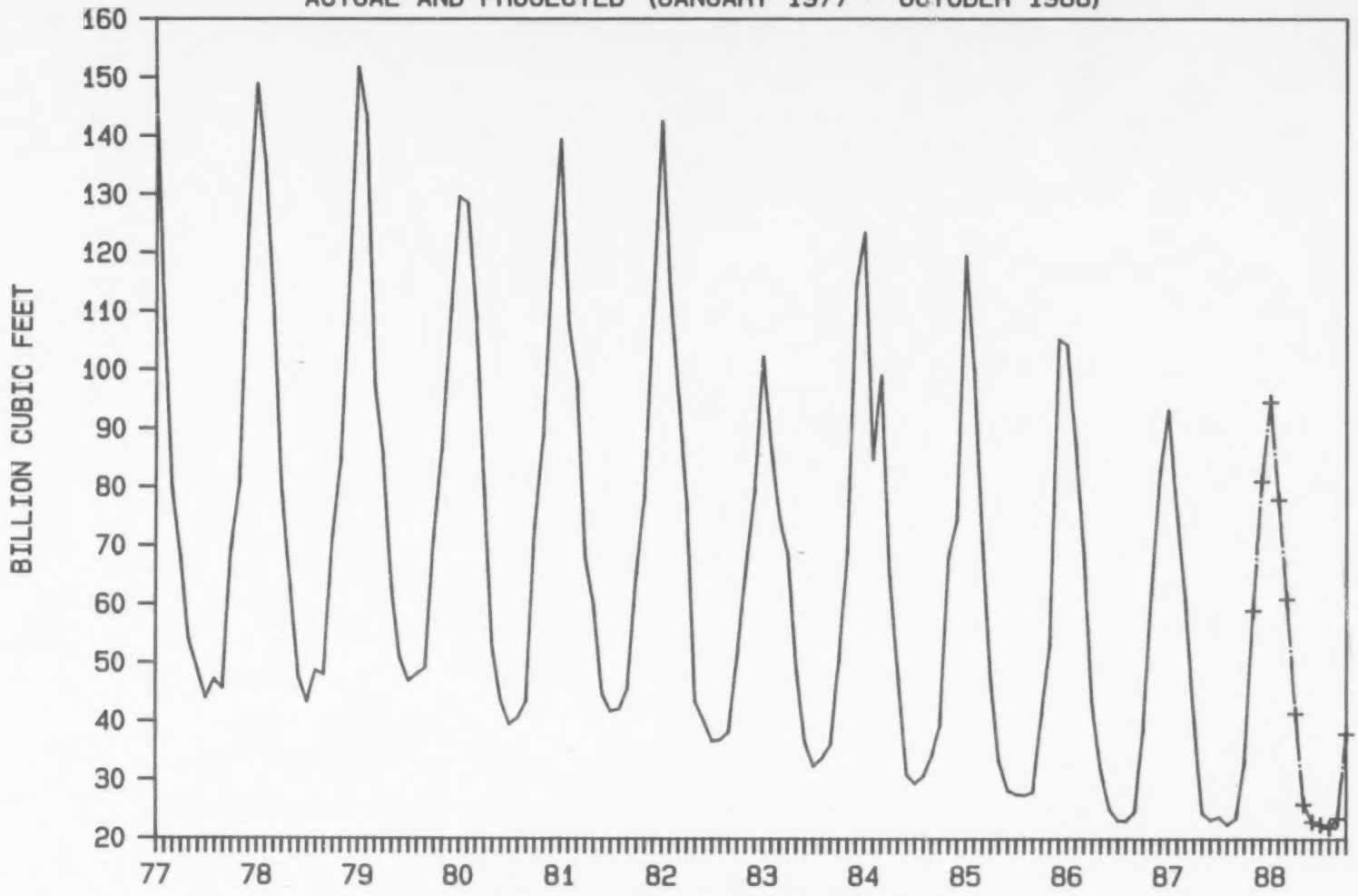
** The "Actual" data values include Other and Storage (In).

Note: This independent forecast is for tariff sales only. Non-tariff sales, which are increasingly popular among commercial and industrial customers, are purchases the made directly from the wellhead (see also Table 15-B).

Source: PUCO Form SG-1 and PUCO, Division of Forecasting and Siting.

FIG. B-4. MONTHLY OHIO TOTAL NATURAL GAS CONSUMPTION

ACTUAL AND PROJECTED (JANUARY 1977 - OCTOBER 1988)



SOURCE: MONTHLY GAS REPORT

—— ACTUAL + PROJECTED

TABLE B–9. PROJECTED SUPPLY AND DEMAND FOR EIGHT MAJOR OHIO NATURAL GAS UTILITIES

COMPANY: CINN. GAS & ELEC.

PROJECTED SUPPLY AND DEMAND (IN MMCF)

MONTH/YEAR	9/87	10/87	11/87	12/87	1/88	2/88	3/88	4/88	5/88	6/88	7/88	8/88	SUMMER	WINTER	YEAR
SUPPLY	2358	4395	7592	10557	12548	10689	8799	5278	3219	2363	2127	2143	21883	50185	72068
DEMAND	2358	4395	7592	10557	12548	10689	8799	5278	3219	2363	2127	2143	21883	50185	72068
DEFICIENCY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% DEFICIENCY	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

COMPANY: COLUMBIA GAS

PROJECTED SUPPLY AND DEMAND (IN MMCF)

MONTH/YEAR	9/87	10/87	11/87	12/87	1/88	2/88	3/88	4/88	5/88	6/88	7/88	8/88	SUMMER	WINTER	YEAR
SUPPLY	5392	9955	18856	27519	34862	30244	24417	15268	7656	4291	4449	4798	51809	135898	187707
DEMAND	5392	9955	18856	27519	34862	30244	24417	15268	7656	4291	4449	4798	51809	135898	187707
DEFICIENCY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% DEFICIENCY	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

COMPANY: DAYTON POWER & LIGHT

PROJECTED SUPPLY AND DEMAND (IN MMCF)

MONTH/YEAR	9/87	10/87	11/87	12/87	1/88	2/88	3/88	4/88	5/88	6/88	7/88	8/88	SUMMER	WINTER	YEAR
SUPPLY	1174	2346	4217	6041	7792	8178	5742	4508	2255	1233	1139	1173	13828	31970	45798
DEMAND	1174	2346	4217	6041	7792	8178	5742	4508	2255	1233	1139	1173	13828	31970	45798
DEFICIENCY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% DEFICIENCY	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

COMPANY: EAST OHIO GAS

PROJECTED SUPPLY AND DEMAND (IN MMCF)

MONTH/YEAR	9/87	10/87	11/87	12/87	1/88	2/88	3/88	4/88	5/88	6/88	7/88	8/88	SUMMER	WINTER	YEAR
SUPPLY	16472	22821	26934	31474	37596	34190	26560	20601	20420	15455	14416	13607	123792	156754	280546
DEMAND	16472	22821	26934	31474	37596	34190	26560	20601	20420	15455	14416	13607	123792	156754	280546
DEFICIENCY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% DEFICIENCY	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

TABLE B–9. PROJECTED SUPPLY AND DEMAND FOR EIGHT MAJOR OHIO NATURAL GAS UTILITIES

COMPANY: NATIONAL GAS

PROJECTED SUPPLY AND DEMAND (IN MMCF)

MONTH/YEAR	9/87	10/87	11/87	12/87	1/88	2/88	3/88	4/88	5/88	6/88	7/88	8/88	SUMMER	WINTER	YEAR
SUPPLY	176	123	189	345	457	568	396	305	125	119	304	316	1468	1955	3423
DEMAND	176	123	189	345	457	568	396	305	125	119	304	316	1468	1955	3423
DEFICIENCY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% DEFICIENCY	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

COMPANY: OHIO GAS

PROJECTED SUPPLY AND DEMAND (IN MMCF)

MONTH/YEAR	9/87	10/87	11/87	12/87	1/88	2/88	3/88	4/88	5/88	6/88	7/88	8/88	SUMMER	WINTER	YEAR
SUPPLY	335	632	871	1189	1302	1118	929	619	395	282	271	266	2800	5409	8209
DEMAND	335	632	871	1189	1302	1118	929	619	395	282	271	266	2800	5409	8209
DEFICIENCY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% DEFICIENCY	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

COMPANY: RIVER GAS

PROJECTED SUPPLY AND DEMAND (IN MMCF)

MONTH/YEAR	9/87	10/87	11/87	12/87	1/88	2/88	3/88	4/88	5/88	6/88	7/88	8/88	SUMMER	WINTER	YEAR
SUPPLY	105	169	268	450	530	505	355	223	140	78	74	68	857	2108	2965
DEMAND	105	169	268	450	530	505	355	223	140	78	74	68	857	2108	2965
DEFICIENCY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% DEFICIENCY	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

COMPANY: WEST OHIO GAS

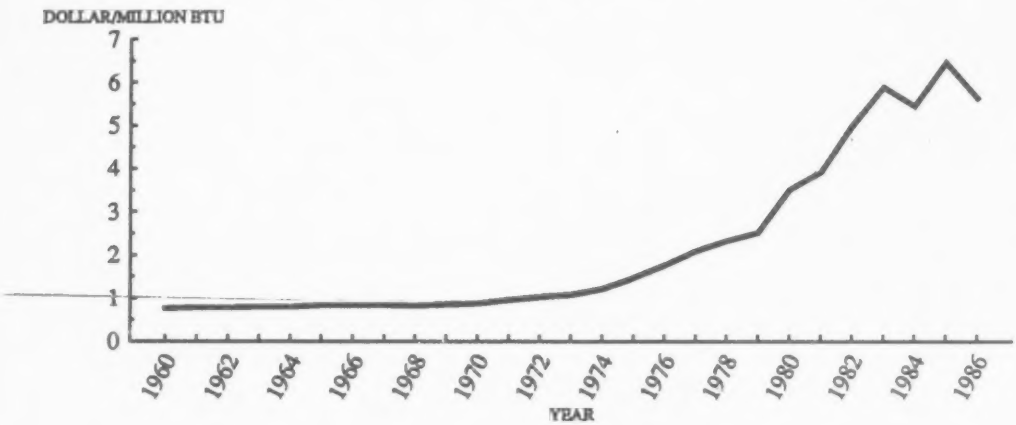
PROJECTED SUPPLY AND DEMAND (IN MMCF)

MONTH/YEAR	9/87	10/87	11/87	12/87	1/88	2/88	3/88	4/88	5/88	6/88	7/88	8/88	SUMMER	WINTER	YEAR
SUPPLY	265	518	931	1393	1794	1470	963	649	294	238	183	237	2384	6551	8935
DEMAND	265	518	931	1393	1794	1470	963	649	294	238	183	237	2384	6551	8935
DEFICIENCY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% DEFICIENCY	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

FIG B-5. ANNUAL OHIO NATURAL GAS CONSUMPTION AND PRICES: RESIDENTIAL SECTOR (1960-1986)

CONSUMPTION VS. YEAR

PRICE VS. YEAR



COEFFICIENT OF TRANSFORMATION VS. PRICE

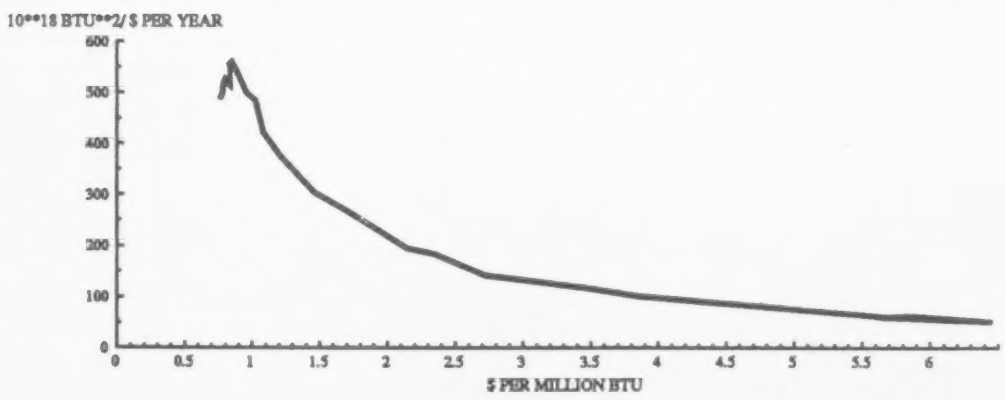
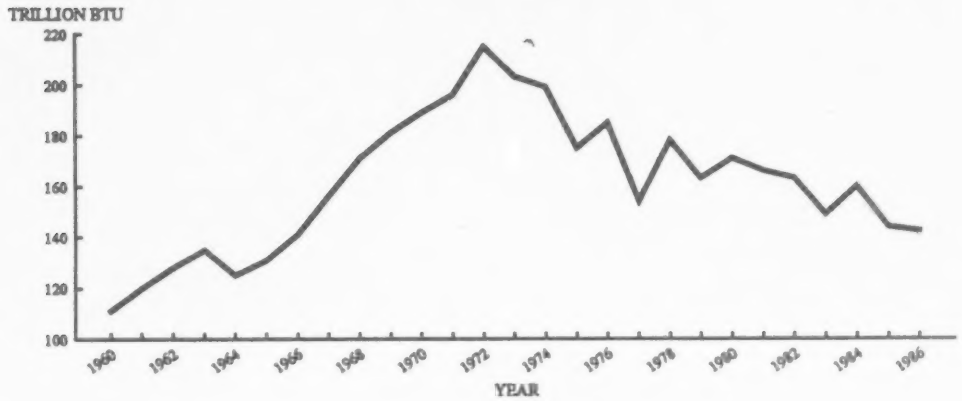
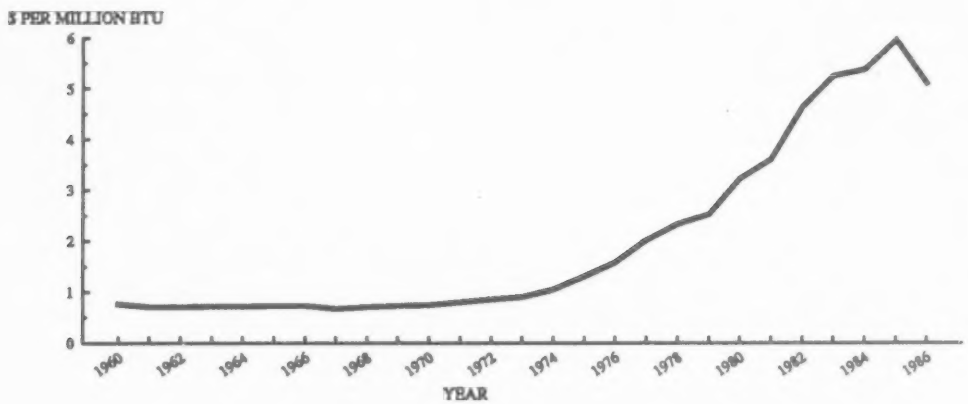


FIG B-6. ANNUAL OHIO NATURAL GAS CONSUMPTION AND PRICES: COMMERCIAL SECTOR (1960-1986)

CONSUMPTION VS. YEAR



PRICE VS. YEAR



COEFFICIENT OF TRANSFORMATION VS. PRICE

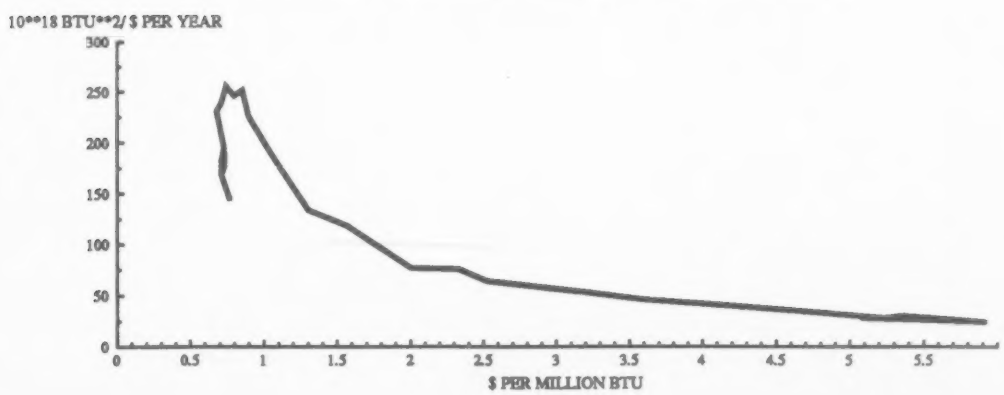
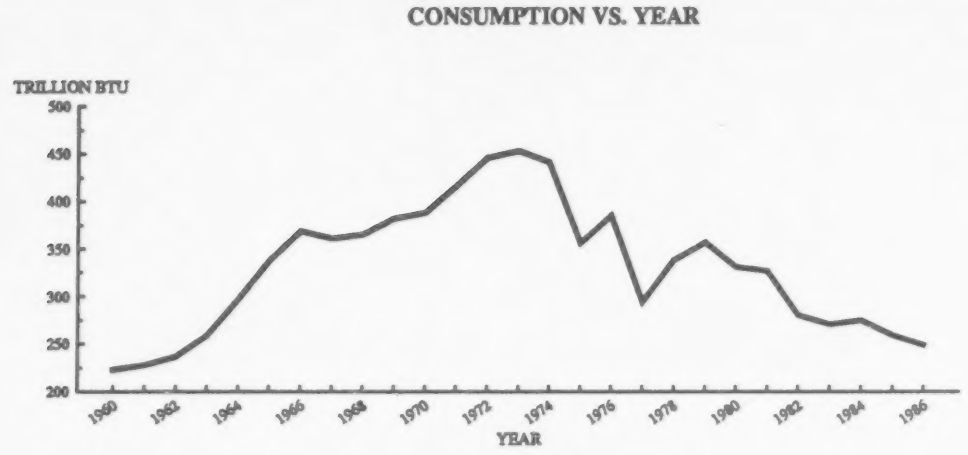


FIG B-7. ANNUAL OHIO NATURAL GAS CONSUMPTION AND PRICES: INDUSTRIAL SECTOR (1960-1986)



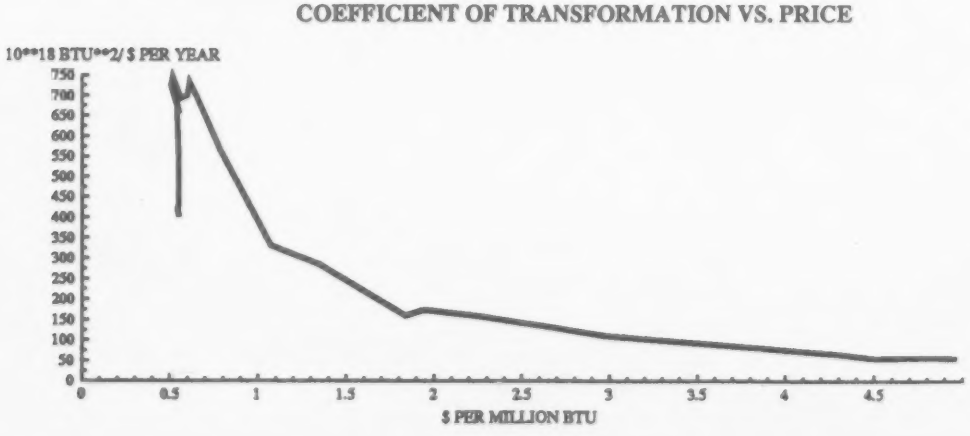


FIG B-8. ANNUAL OHIO NATURAL GAS CONSUMPTION AND PRICES: TOTAL SECTOR (1960-1986)

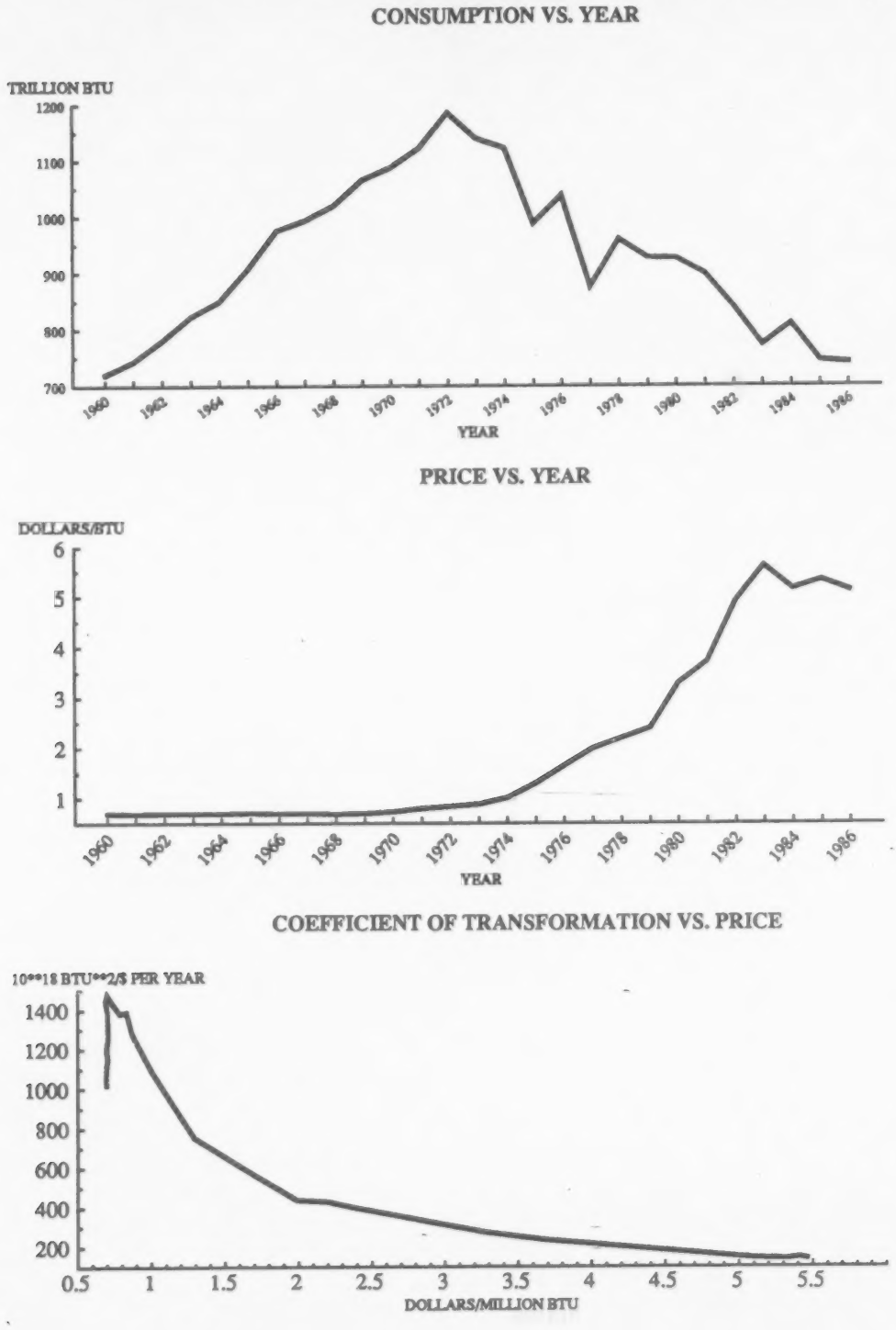
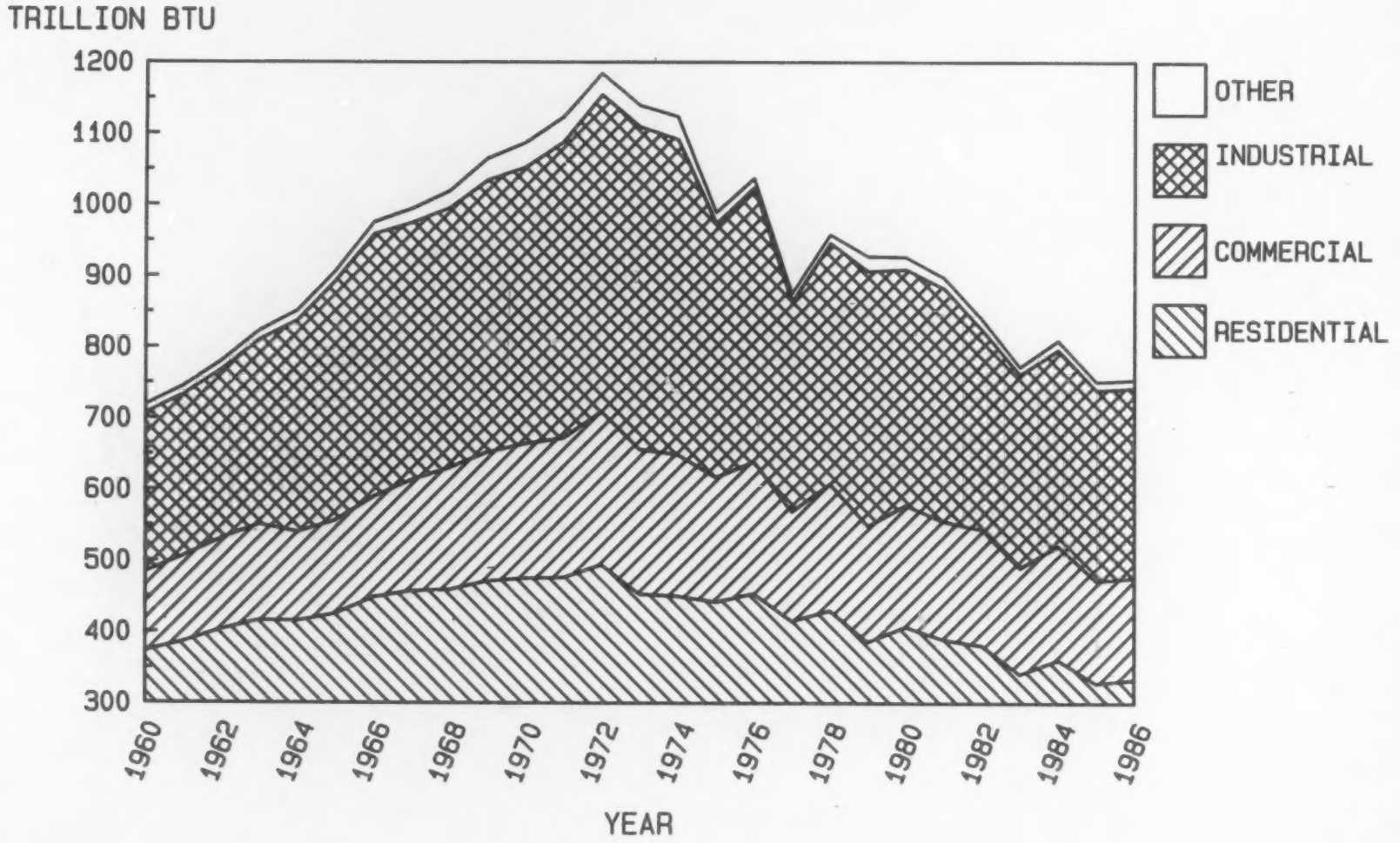


FIG. B-9. ANNUAL OHIO NATURAL GAS CONSUMPTION BY SECTOR (1960 - 1986)



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